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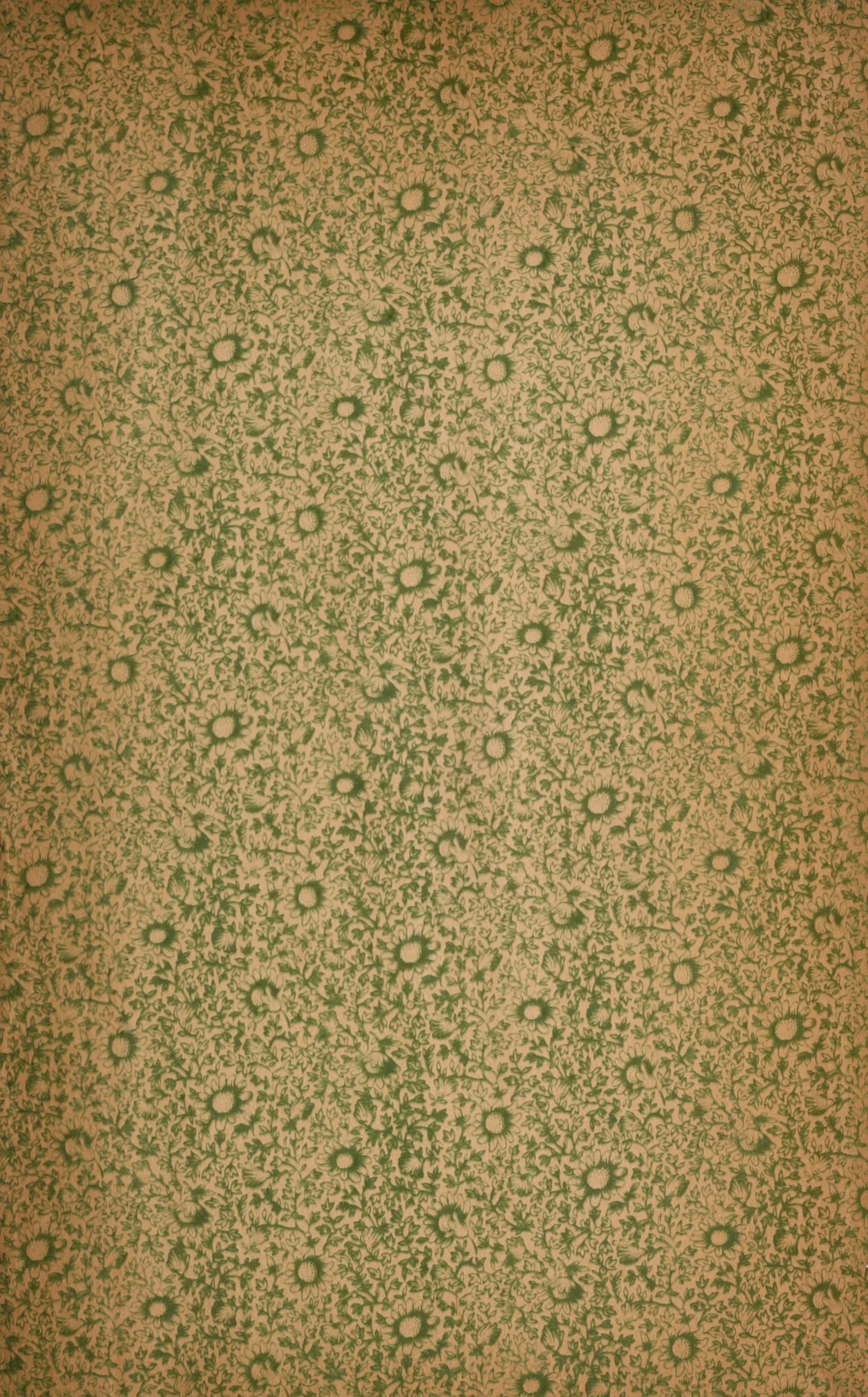

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THE

DENTAL REVIEW.

DEVOTED TO THE ADVANCEMENT OF
DENTAL SCIENCE.

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ORIGINAL COMMUNICATIONS.

ETHICS.*

BY H. H. WILSON, D.D.S., CHICAGO, ILL.

Gentlemen: Ethics, or Moral Philosophy, is that science, or art, which teaches men their duty, and the reasons for it. Epicurus says: "Moral truth rests entirely upon the ascertained consequences of actions." Therefore, to be a moral truth, a thing must have been tried and its result determined. That which has a general tendency to benefit society, and that which produces the most good to the greatest number, is the true standard of morality.

"The first generally recognized code of ethics in the United States was that adopted by the American Medical Association, at its first meeting in 1847. Prior to that time the codes of ethics which existed in this country were instituted by State or local societies, and in many, probably in most, of the States of the union there were none. It is but justice to the memory of an excellent English physician to state that the American code is based on that prepared by Thomas Percival, and published in 1803. Credit to Percival was given by Isaac Hays, chairman of the committee which prepared the national code, as follows: 'On examining a great number of codes of ethics adopted by different societies in the United States, it was found that they were all based on that by Dr. Percival, and that the phrases of this writer were preserved to a considerable extent in all of them. Believing that language so often examined and adopted must possess the greatest of merits for such a document as the present—clearness and precision—and having no ambition for the honors of authorship, the committee which prepared this code have followed a similar course, and have carefully preserved the words of Percival whenever they convey the precepts it is wished to inculcate.'"

---

*Read before the Odontographic Society of Chicago.

It was from this code, which has stood the tests of over forty years, that the American Dental Association in 1866, extracted its code of ethics almost entirely.

I shall speak of Professional Ethics as applied to the Dentist, which I will divide into three heads. First: The duty of one dentist to another dentist. Second: The duty of the dentist and the physician each to the other, and Third: The duty of the dentist to his patients; and lastly, of the duty of patients to their dentists, which can hardly be called Professional Ethics.

The first of these will require much the greatest amount of consideration.

It is unprofessional to advertise in the public prints, by posters or handbills, for, to do so, is to put the profession not only on a level with tradesmen, but also with quacks and charlatans. The dentist who resorts to such means benefits himself at the expense of the reputable members of the profession. In place of this it should be the aim of every moral dentist, to so conduct himself and his practice, as to be a benefit to the profession at large as well as himself. Every dentist who renders good service to his patients, asks a good fee for the same, and upholds the dignity and reputation of his brother practitioners, as well as himself, and *does* render a benefit to the profession at large. For it is by establishing a reputation for usefulness as well as integrity, that the general public is made aware of the necessity for our services. And if all who can afford it and are in need of our services would patronize the dentist, have their mouths placed and kept in good repair, we would all have enough to do, and there would still be enough patients left for the colleges. Right here I wish to note a decided improvement in the form of announcement indulged in by our colleges, for, in the not very remote past, colleges conducted by reputable practitioners have had advertisements in the newspapers which should have caused the gentlemen referred to to have forfeited their membership in every dental society to which they belonged. Still there is room for considerable more improvement. There is no more excuse for a college advertising for patients of limited means, than there is for a dentist conducting a private practice. It is to patients of limited means that the most of us are catering. The number of dentists whose patients are all of unlimited means, is very small indeed. I believe that the proper announcement for a reputable college to make is that which is permitted to a reputable dentist, namely: the name of the college and the infirmary, followed by the address, *only*. Or, if they choose, they might announce themselves as willing to render service gratis for the worthy poor. There is considerable difference between poor people and people of limited means, and it is only for the former that the colleges should work. Our Alma Mater, always conveys the idea that she is willing and anxious to do all she can for her alumni, yet every year she takes thousands of dollars from the pockets of her younger graduates by working for those patients who are able to pay a moderate fee.

It is not upholding the dignity of the profession for a member to parade the delights and distresses of the practice of dentistry, outside of his office, either for the purpose, ostensibly or otherwise, of gaining patients for himself or of lauding the profession to the laity. A dentist outside of his office should be simply a gentleman, except in emergency cases, when he should be always ready and willing to act for the relief of a sufferer to the best of his ability, whether or no there be any prospect of compensation. These emergency cases we are often called upon to treat in our offices, and this, *only*, is sufficient excuse for a dentist to render any professional service to a patient whom he knows to be having an operation, or series of operations, performed by another reputable practitioner. I will cite a very common case: A patient has a soreness in a tooth—an incipient abscess—and he applies to a dentist for relief. The dentist tells him that an abscess is developing, but that he thinks he can in a few days remedy it and save the tooth, that if he can, it will be a very useful one, and that it certainly should not be extracted without an attempt at saving. So the patient is persuaded to have the tooth treated with a view to saving it, and he is directed to come again in two or three days. After the lapse of half that time, the pain, instead of being lessened is greatly increased, as we know is often the case even with the best of treatment. By this pain the patient's mind is affected—as I believe all minds are, more or less, affected by pain—and he says to himself, "I don't believe Smith knows what he is doing with that tooth and I'll just go down to Jones and have it pulled." He accordingly goes to Jones, tells him what he has had done, and asks him to extract it. Now Jones tells him, "Of course it ought to be pulled, that's what should have been done with it in the first place." Or, perhaps, he does not say this but simply accedes to the wish of the patient, and extracts it, with an, "O, yes! Smith's a good dentist." And therefore Jones is a disreputable practitioner. But suppose the patient goes to Brown to have his tooth extracted. Dr. Brown is a member of the "Odontographic" society, and he says to him: "No, that tooth has now reached a point where I think it can be saved, and you had best go back to Dr. Smith and let him go on with his treatment." And Brown will positively refuse to extract it. But, if for any reason the patient is unable to reach the dentist who is treating him, and he is only seeking relief from pain, it is clearly the duty of any dentist to whom he may apply, to treat the tooth and be careful to not say, or act, any disparagement to the dentist in charge of the case. Such disparagement can be acted in a very mean, sneaking way, and without saying a word, by simply listening to, and by silence, giving consent to any fault the patient may have to find. As compared with this sneaking kind of a man, the blackguard is an honorable gentleman. Another thing about which we should be very careful is the placing of a price on any operation, or series of operations. If the services have been rendered by some other dentist, the only safe rule is that we should never state what our fee would have been for the same services. I happen to know of a case where a reputable dentist got himself into a very awkward position by not observing this rule. Two young men called upon him, and one of them recommended by an old patient, asked to have his teeth examined and an estimate made of the cost of having them put in repair. When this was done he seemed to be considering the amount, and asked, "What would you have charged for this work in my friend's mouth?" He looked at it and told him he could not tell exactly, but that it would be somewhere between seventy and ninety dollars. This was about twice as much as he usually charged for that amount of work, but he was determined to put it high enough so as not to conflict with the fee of the dentist who did the work. What was his surprise a few days later at receiving a summons to appear before a court of law and give testimony as to the value of that work, as the dentist who did it was suing for the amount of his bill, and the patient was opposing it on the ground of exorbitance, for, instead of being somewhere between seventy and ninety, it was over two hundred dollars.

The question of fees is an important one, but as we are soon to have a paper devoted exclusively to the consideration of that subject, I will only say that in a great many cases the fees demanded are altogether too small and out of proportion to services rendered, and that often times there is too much discrimination between patients.

Section 3, Article II, of the code of ethics of the Chicago Dental Society, says: "The dentist when applied to, for merely advice or temporary relief, by the patient of a reputable practitioner, whose services at that time he is unable to procure, should guard against disparaging the family dentist by hints, inquiries, or other means calculated to weaken the patient's confidence in him. At the same time the dentist should not, from too high a sense of professional courtesy to his neighboring practitioner, allow the interests of persons so applying for counsel or service, to be jeopardized."

In all such cases, it must be remembered, the "good of the patient" is the first question to consider. If the patient is suffering and there is need of an immediate operation, then the dentist applied to should perform it, but if there is plenty of time for the patient to reach his family dentist, he should be thus directed. But nothing in this should be so construed as to deny the patient the right to at any time exchange the services of one dentist for those of another.

If a patient comes to us and says positively he will not go again to the dentist who has been treating him, we would be justified in taking charge of his case. Nor are we expected to inquire of every person who applies to us, who their dentist has been or why they left him. But if a patient comes to us with a tooth which we can see is in process of being treated, we *should* make such inquiries and govern ourselves accordingly.

The next section of the code referred to, says: "And it is ever to be regarded as unprofessional to warrant operations or work as an inducement to patronage." This clause is, I fear, one which is often forgotten by dentists, judging by the number of times in my limited practice, that I have heard patients say, "Dr. So-and-So filled that tooth a little over a year ago, and warranted it for ten years, and here it is out." And the Dr. So-and-So referred to is often a dentist in good standing. This is not upholding the dignity of the profession, neither is it benefiting the dentist who does it. The proper thing to say to a person who asks us to warrant our work, is that we will do what is right and that we must be the judge. If our work is faulty and gives out, of course it is our duty to replace it, but a filling may fail or an artificial denture be broken within a year through no fault of ours.

According to the code of ethics of the American Medical Association "It is derogatory to professional character for a physician to hold a patent for any surgical instrument or medicine." I see no reason why this rule is not equally applicable to the dental profession. In fact, I believe it is applied, as the code of ethics of the American Dental Association, which code is the adopted criterion of this society, declares that "Dental Surgery is a specialty of medical science." Certainly if an instrument or appliance possesses true merit, it should be placed in the hands of the faculty at the lowest possible cost, so as to bring it within the reach of the poorer members, and not have the price kept up by patent.

Dentists are certainly the best judges of who are quacks and empirics, and it is clearly our duty to enlighten and warn the public in regard to them. A man came into my office a short time ago and asked me how much I would charge to do some work for him. I made an examination and gave him my estimate. He told me it was altogether too much, that he had had work done by several of the leading dentists of Chicago, and was never before asked so much. He repeated this several times, and I became convinced that he had not been to any first-class dentist, and asked him to whom he had been. He immediately mentioned the names of three of the leading down-town quacks, and I so informed him. He left in a huff and I have not seen him since, but I am satisfied with what I told him, and also to lose that class of patients.

The code says: "When general rules shall have been adopted by members of the profession practicing in the same localities, in relation to fees, it is unprofessional and dishonorable to depart from these rules, except when variations of circumstances requires it." And it is certainly beneath the dignity of the profession for any dentist knowingly to under-bid another dentist, although there may exist no agreement between them in relation to fees.

Much, in fact most, of what I have said in the preceding chapter, relates also to the duty of the dentist and the physician, each to the other, and need not be repeated. The two professions are so closely allied that they should, for the benefit of their members as well as their patients, be practiced in harmony. The only thing I think necessary to say here is to warn the members of each profession against encroaching upon the sphere of the other. It is not proper for dentists, because they possess some knowledge of medicine, to practice it upon their patients and endeavor to cure them of colds, rheumatism, etc. Patients in need of such services should be sent to their family physician, unless they say that they have none, in which case we are at liberty to recommend one. Neither is it proper for physicians to extract teeth, except in small towns, or in the country, where there are no dentists. There are probably a few, very rare, exceptions to this rule, but only enough to prove it. In the first place physicians are not competent to judge as to whether a tooth should be extracted or not, and in the second place any man who practices dentistry only to the extent of "pulling" teeth, will, no matter how conscientious he may be, extract some which a dentist in full practice would save. Neither should a physician send a patient to a dentist to "get that rotten tooth pulled," as, I am sorry to say, is often done, as it generally gives the patient an erroneous idea which it is difficult for the dentist to overcome. He should rather instruct his patient to go to the dentist, have his teeth examined and placed in proper condition.

Article one, of the code of ethics of the American Dental Association, says: "The dentist should be ever ready to respond to the wants of his patrons, and should fully recognize the obligations involved in the discharge of his duties toward them." As they are, in most cases, unable to correctly estimate the character of his operations, his own sense of right must guarantee faithfulness in their performance. His manner should be firm, yet kind and sympathizing so as to gain the respect and confidence of his patients; and even the simplest case committed to his care should receive that attention which is due to any operation performed on living sensitive tissue.

It is not to be expected that the patient will possess a very extended or very accurate knowledge of professional matters. The dentist should make due allowance for this, patiently explaining many things which may seem quite clear to himself, thus endeavoring to educate the public mind so that it will properly appreciate the beneficent efforts of our profession. He should encourage no false hopes by promising success, where in the nature of the case there is uncertainty.

The dentist should be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which is their right."

Remember that a dentist may be intemperate in a great many ways. Keeping such late hours, whether it be for amusement or study, as to deprive himself of the proper amount of sleep, is intemperance and reprehensible.

The dentist should remember that he is the doctor and not allow the patient to dictate to him what shall be done. If, in the opinion of the dentist a tooth should be saved, it certainly should not be extracted simply because the patient so desires.

One of the first duties we owe our patients is absolute cleanliness. This we know, can only be accomplished by the use of antiseptics and disinfectants. The reasons for this are too obvious to need mentioning here. Any man who will put an unclean instrument or piece of rubber in a patient's mouth is not only guilty of the greatest breach of ethics, but is guilty of malpractice and criminal carelessness.

A dentist should never deceive a patient, especially a child. Outside of the ethics of the case a dentist can not afford to practice deception. If it is necessary to extract a tooth for a child, and it cannot be persuaded to have it done, it is much better to use force than deception; and we should not allow the parents or any one else to do so if they expect us to do the work.

The question of consultations is an important one to the patient and I believe should be much oftener indulged in than is the general practice. This can often be done without any inconvenience to the patient, as we can relate the case with sufficient accuracy and clearness, to allow another dentist to form an opinion. But when this can not be done we should not hesitate to take our patient to the office of a brother practitioner and there hold a consultation. If these were held oftener the public would soon learn that they do not reflect upon the ability of the dentist requesting them.

The first duty of a patient to the faculty is to select a reputable dentist, and one in whom he has confidence. It is very important that the patient should have confidence in his dentist, else it will be very difficult to render satisfactory service. Having selected a dentist he should give him full charge of his mouth, and be punctual in the keeping of appointments. A patient, especially a lady, should not through any false pride or modesty, be ashamed to answer any questions a dentist may ask in regard to her health in general, as the conditions of remote parts of the body often have great bearing on the condition of, or pain in the teeth.

When a patient wishes to transfer his patronage from one dentist to another, justice and common courtesy require that he should declare his reasons for so doing. The loss of confidence is certainly a sufficient reason, and a high-minded dentist can not wish to continue his services if he can not have the confidence of his patient. The reasons for the loss of confidence in some instances, may be as indefinite as in the following familiar lines:

I do not like thee, Dr. Fell;
The reason why I can not tell;
But this I know, and that full well,
I do not like thee, Dr. Fell.

Now under these circumstances, Dr. Fell should advise his patient to apply to some other dentist.

In conclusion, I would like to call the attention of the faculties of our dental colleges to this subject, and to urge upon them the importance of delivering at least one lecture in each course upon this subject, that the student may before graduation become familiar with "THE CODE OF ETHICS."

DANGER ARISING FROM THE TREATMENT OF TUBERCULOUS PATIENTS.

BY W. S. SMITH, D.D.S., NEWCASTLE, KENTUCKY

This is a subject which is creating some interest and discussion in the medical profession, and I believe should enlist the interest of every practitioner of dentistry.

If it be possible for one to become infected from the sputa or saliva, of the tuberculous subject, certainly we are more intimately exposed than the practitioner of medicine. Because the saliva and blood, either becoming dry, contaminates the air of the room, and consequently can be carried into the respiratory passages with ease.

I don't expect to go into detail, but only make some suggestions relative to the pursuance of some prophylactic measures to be adopted, to obviate the possibility of infection.

The question naturally arises: Is tubercular phthisis pulmonalis absolutely infectious? and if so, how or by what means is infection transmitted from one person to another? This question was agitated and affirmed twenty years ago by Villemin and Chauveau (two French physicians), who labored to demonstrate that inoculation of tuberculous matter only would produce tubercle.

Cadeat and Maleat, at the meeting of the Academie of Sciences of France, December 12, 1887, present the following conclusions regarding the transmission of tuberculosis by the respiratory tract: 1st. "Of forty-six animals made to inhale dust containing tubercular matter, two only died. 2d. Tuberculosis could invariably be caused by enclosing animals in chambers into which tubercular liquids were admitted. 3d. If tubercular matter was injected into the trachea the animals became rapidly tuberculosis."

These experiments go to show that tuberculosis is developed more readily when the tubercle-bacilli enters the respiratory tract by a liquid vehicle than in the form of dust.

But it is sufficient to know that infection is produced by inhaling the poisonous dust, although only about seven per cent of those exposed by such inhalations contract tuberculosis. We are told that one of the most valuable labors of the collective investigation committee of London, is that relating to the transmission of phthisis.

While the majority of replies to inquiries were unsupported negatives, two hundred and sixty-one answers coming from physicians in family practice, affirmed that phthisis may be communicated from the sick to the well, and sufficient evidence was given in proof of the statement. One hundred and ninety-two observers recorded cases where both husband and wife became phthisical, in one hundred and thirty cases there being no phthisis in the family of the one to whom the disease was thought to have been transmitted. The sources from which the disease under consideration can or may be conveyed, to us will necessarily be first to be considered, viz: The cuspador and the bur-cleaning wheel on the dental engine, and sometimes an open pitcher containing drinking water.

We are told that in the blood of the tuberculous patient we find the spores of the bacillus, and in the sputa we find the spores and bacilli. We might reasonably suppose that both would be found in the saliva. My purpose is not to give you a paper of much length, therefore will come to a close by endeavoring to answer the question of most interest to us as dental surgeons, which is, how shall we obviate infection? I would suggest that we put in the spitoon ½ ounce of sulphite of soda, before it is used by the patient, and when it is to be emptied, put into it ½ ounce of acetic acid, which will unite with the soda, and set free sulphurous acid gas. The vessel should be covered until effervescence ceases. The evidence we have that sulphurous acid gas destroys the bacilli, is sufficient to uphold us in this procedure. For cleansing the burs, before putting them on the wire wheel of the dental engine, dip them in wood creosote or an alcoholic solution of menthol, either of which has been proven to be a bactericidal remedy. Lastly, never have an open pitcher or bucket, for the purpose of containing drinking water, for we find from the investigations of Cadeat and Maleat, that the disease is more surely developed through the use of a liquid vehicle containing the bacilli, than by any other source, the water becoming contaminated by the dust settling upon it.

Hoping that I have given you food for thought which will develop fruit of a most satisfactory nature in regard to this very interesting subject, I submit these remarks for your consideration.

Copper Amalgams.*

By Dr. W. St. G. Elliott, London, England.

As it has been stated in the professional journals, on the authority of some prominent dentists, that copper amalgam does not shrink, and as this was quite contrary to my own experience, published by this society some years ago, I have undertaken a more extended series of experiments, the result of which is now before you. I have tried four modes of ascertaining the shrinkage, viz: Stopping inserted in celluloid, in human teeth, in glass tubes, and the specific gravity test. The latter test is the only one I consider of much value. It was introduced by Mr. Charles Tomes, many years ago. The reason why the other modes are objectionable is, that the coefficient of expansion is not the same as that of a human tooth, glass probably coming the nearest to it. We have here twenty-four experiments with tubes, twenty-one of which are with copper amalgam, while the remaining three are with a silver-tin alloy. You will notice that all the copper amalgams have allowed the red ink to pass them, while the silver alloy has shown itself to be fairly tight.

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* Read before the Odontological Society of Great Britain.

TABLE OF SHRINKAGE—SPECIFIC GRAVITY TEST.

		Shrinkage per cent.	
5 specimens of	A	.65	Copper.
1 "	A^1	.54	
2 "	B	.66	
4 "	C	.61	
1 "	E	.35	Silver alloys.
2 "	F	.15	
1 "	Silver coin	.21	
1 "	Copper Amal. and Silver filings	.48	

Masses tested weighed 10 to 12 grammes.
Kept for six days at a temperature of 100°.

We have before us a table which I have drawn up of the absolute shrinkage of some nine or ten specimens of copper amalgam. When I brought before you similar tables some years ago, the accuracy of my experiments was questioned, because a very remarkable result was shown. These earlier observations have, however, been quite corroborated by the more recent ones. You will notice that the amalgam does most of its shrinking within the first twenty-four hours, and that subsequently it seldom remains the same for any length of time, shrinking and expanding in a small but measurable degree. To decrease the possible errors which might arise in this delicate form of investigation, I have used large masses of amalgam. In the earlier experiments I took less than two grammes, while in the present ones I used ten to twelve grammes. There is a fair amount of agreement in the shrinkage of different specimens of copper amalgam—60 to 80 milligrammes in 10,000.

TABLE SHOWING DAILY FLUCTUATION.

	Nov. 5.	Nov. 7.	Nov. 8.	Nov. 9.	Nov. 10.	Nov. 12.	Nov. 13.	Maximum Shrink'g.
No. 1	12.041	12.113	12.117	12.116	12.114½	12.114½	12.115	76
" 2	12.010	12.081½	12.085	12.087	12.085	12.088	12.089	79
" 3	12.015	12.087½	12.095	12.092	12.098	12.098	12.101	86
" 4	12.010	12.080	12.085	12.087	12.093	12.094	12.098	88
" 5	12.016	12.089	12.087	12.089	12.091	12.093	12.095	79

The above represents the daily change; increase in weight showing shrinkage.

As a matter of comparison, I have combined with this table similar tests with the same alloy used in the tube experiments. You will see that the per cent of shrinkage in copper amalgam is from 5 to 7 per cent of the mass, while with one of the two specimens of silver alloy, it is a trifle over 3 per cent the other a little more than 1 per cent, or, in other words, the best copper amalgam shrinks four times as much as the silver alloys used.

BREAKING STRAIN.

Bricks, 1 mm x 4 mm x 25 mm. November, 1888.

Kind.	No. of Experiments.	Average Strain.	
A	52	$12\frac{15}{16}$	Home-made copper Amalgam
A¹	36	$4\frac{3}{16}$	" " underheated
B	28	$33\frac{1}{4}$	" " sixth heating
C	37	38	Copper Amalgam from Manuf'rer
D	30	$34\frac{1}{4}$	" " " "
G	26	$41\frac{3}{16}$	" " " "
G	23	41	" " " "
G	20	$34\frac{3}{8}$	" " " "
E	27	$55\frac{1}{8}$	Silver alloy " "
E	23	$69\frac{13}{16}$	" " " "
E	24	$23\frac{13}{16}$	" " " "
F	35	$63\frac{3}{16}$	" " " "
F	4	60	" " " "
F	17	$58\frac{3}{8}$	" " " "

Now we come to the question of edge strength. This table shows the breaking strain of the several amalgams already alluded to. The breaking strain was obtained by placing small amalgam bricks, one millimetre in thickness by four in breadth and twenty-five in length, in a crushing apparatus I have made for the purpose. These bricks are formed in a steel mould, which we have upon the table. Five bricks of each kind of amalgam were tried and each brick gave me from five to ten breakages. You will notice the enormous difference that exists between the maximum and minimum, some bricks giving way at a pressure of less than an ounce, while others required as much as seven pounds. The difference in strength of the amalgam bricks is owing more to the manner of treatment than to the difference in kind. To get the best results the mercury should be fully driven out of the mass before it is broken up in the mortar. If the ordinary directions are followed, and the spoon removed from the heat on the appearance of the globules, it will be found that the amalgam is comparatively weak. It is better to drive off an excess of mercury by overheating and subtracting, subsequently adding what may be necessary to obtain the proper plasticity, than it is to allow some of the combined mercury to remain in the mass. The bricks on the table which are so weak are those made by underheating the specimens. One of the several specimens—both in the specific gravity and breaking strain tests—has been heated and worked over six times on six consecutive days, and I find little, if any, injury resulting. It will be observed that the silver alloys tested give a better result, not only as regards skrinkage, but edge strength. It has been stated in the text-books that silver is the expanding element of silver alloys. In this series of experiments I have only tried one specimen of silver, and that is standard or coin silver mixed with mercury. As you see, I fail to get any expansion, but a considerable degree of contraction. Of course a single experiment does not prove anything, but I hope to go into the subject more fully.

I have tried a curious experiment in mixing coin silver filings with plastic copper amalgam. The gravity test has shown a diminution in the amount of contraction.

Amalgams of all kinds are very uncertain bodies; there is a molecular change going on, apparently indefinitely, and, although it may not be sufficient to be a serious practical objection, yet it certainly must be one cause why amalgam fillings are not always satisfactory.

The directions given by manufacturers of copper amalgam are, that it shall be washed in dilute sulphuric acid, and subsequently in water. You will see by the Litmus-paper test that, when these directions are closely followed, the acid is not fully eliminated. For my own practice, after washing several times with water, I wash with soap and water.

One word in regard to the manufacture. Copper amalgam is, as you know, made from the sulphate of copper. This is dissolved in water, precipitated by the action of iron or zinc. I have handed round, for your inspection, two specimens, one done by aid of zinc, the other of iron. While the zinc one has a fairly good color, the iron has produced a marked effect upon the other, the oxide of iron showing itself by its red appearance. One ounce of the crystals ought to produce an ounce of amalgam, costing seven pence (7d). The rapidity of precipitation is vastly increased by the aid of heat. I have not found by these experiments that the precipitation by iron gives, in any respect, better results than that of zinc, while the color is certainly inferior.

Finally, it seems to me that it has been fairly proven that copper amalgam shrinks much more than some silver alloys, and has also less strength, but at the same time it is undoubtedly a material of very considerable value as an antiseptic, in the stopping of teeth of poor structure.

CEMENTS IN MOLAR TEETH.

BY. F. M. HARRIS, D. D. S., NEW ALBANY, IND.

The property of certain and easy adaptation is one of the characteristics that the ideal filling material must possess, and, other things being equal, a substance is useful in preventing further decay in proportion as it possesses this quality.

Miller tells us that an organism feeding on starch, and requiring for its maintenance oxygen, excretes an acid that dissolves away the lime, and this decalcification of the tooth substance constitutes decay, and that these organisms are ever present in the mouth, and ready, under proper conditions, to fructify in any protected spot, there to multiply and carry on the work of tooth destruction. If this theory be true then any operation that will deprive these micro-organisms of starch and oxygen, or air, or one of them, will so interfere with their necessities that they can no longer exist. Accepting this theory, no further treatment for the arrest of decay is necessary, than that as many of these organisms be removed from the cavity as is practicable, together with their food supply, and that it be then filled with a substance that so adapts itself to the cavity as to prevent the further admission of food, or air. If, however, we accept any other theory we shall be successful or otherwise in proportion as we exclude from the cavity substances found floating in the oral cavity.

Adaptation is more certain where there is adhesion to the walls of the cavity, and I call to mind no filling material that adheres as readily or so certainly as the cements. They are poor conductors of heat, and fillings of this material may therefore be placed near the pulp, or in contact with sensitive dentine with less danger from thermal changes than where metals are used.

They are quickly and easily introduced, do not require an especial shaping of the cavity, never discolor the teeth, do not necessarily require to be pressed to place, and are inexpensive. In short, they seem to possess all the desirable properties of a tooth-filling material, save one. They are not durable, and so, with all their good qualities are commonly used only for temporary fillings, and for foundations. When I can place cement in contact with dentine I feel assured that the tooth bone so protected is in the best possible condition to resist the further attack of destructive agents.

The term temporary is not always well used, for the best cohesive gold filling introduced may be less permanent than a cement filling. Not that the cements are very durable, though I have seen fillings of this material that have done good service for several years, and I have recently covered one which the patient assured me was put in by Dr. Merrill twenty years ago, and had only in the last few months become worn so much as to render the dentine sensitive. I say, not that cements can safely be accounted durable, but they may, in certain cases, do better service in the preservation of a tooth than any all-gold filling we are able to introduce. I was pleased to see the class of '88 in the Ohio Dental College using cements freely, and I felt assured they would never leave them out of use till some more fitting material should be found to fill their place.

Those troublesome and sensitive cavities found on the buccal surfaces of lower molars, and extending transversely across the tooth at or below the gum-margin, offer a strong inducement for the use of cement. If the decay be superficial, and the enamel frail and chalky, I believe that the interest of the patient may often be better served by the use of such fillings than by using other materials. But in these cases, and in fact all operations where permanency is not assured, it is well to inform the patient of the facts in the case and endeavor to secure such an understanding between him and yourself as will assure mutual co-operation.

Just how long such a filling will serve a good purpose I am not able to say, for there are powers that work on cements that I do not understand, and a change in the care of the teeth, or in the health of the individual, may modify its durability.

In some cases, a cement under or even near the gum becomes soft and useless. The cause of this I do not know, but I suspect that in some cases at least, that part of the filling was wet before it had become hard.

In the use of cements it is well to remember that they are absorbers. A well-made cement, immersed in an aqueous solution of tannin, will be colored throughout its substance, or it may even become infiltrated with pus. I have recently had a marked example in a case where a hollow gold crown had been placed upon a living root. The pulp died, and the cement was so infiltrated with pus as to be extremely offensive, and even the last particle had to be removed and the cap disinfected before it was ready to be replaced.

Whatever may be the cause, or however much it may share the same with other materials, it is quite certain that cements possess the power of hardening the dentine with which it remains long in contact, and there are many of these buccal cavities so shallow that when a well-introduced cement filling has worn away no further treatment is necessary than that the patient should keep the cavity clean and well polished.

Some teeth are so sensitive that to cut away all the chalky enamel and shape the cavity for gold involves an amount of pain that the dentist himself would by no means undergo, and even when the gold filling is introduced thermal changes will occasion much discomfort. There is this difference between the possibilities in shallow cavities : If they are undercut and a gold filling inserted, and the filling leaks or comes out, it does not leave the cavity in as good a shape to be kept clean by the use of a brush as when cements are used, and no undercuts or pits are made.

I have used cement for fillings in the proximal surface of molars and with varying results, but as a whole they have not proven satisfactory. Where I have been able to secure absolute dryness of the cervical margin, I have used gutta-percha for the upper third and cement for the remainder of the cavity, but I am not convinced that such fillings possess superior merits.

Compound cavities, involving both proximal and grinding surfaces, are not often satisfactorily filled with cement for the amount of wear to which they are exposed will soon so cup the angles as to allow food to wedge between the teeth and occasion discomfort.

I have filled crown cavities with cement, but have found that in most cases it soon washes or wears out and must be covered with metal or frequently renewed.

A notable exception to this, however, exists in the mouth of a young lady for whom I filled an upper left first permanent molar five years ago. In this case the cavity was so extensive that not only the grinding surface, but the mesial and buccal walls were broken through. I applied the rubber-dam, filled the tooth carefully, dressed the filling, covered it with sandarac varnish, and dried thoroughly with hot air. A few months ago it showed little or no wear.

Cement fillings thus made are always more durable than those that are more carelessly treated.

Pulpless molars are often better filled with this material, and left for some days or weeks to gain a reasonable assurance that no immediate trouble will ensue.

But it is as foundations for fillings that I use cements most, and it is when so used that I find them of greatest value.

It sometimes happens that proximal and compound cavities are deeper than is necessary for the successful retention of the filling, and in such cases I fill with cement, and if the filling is to be of amalgam I try to secure anchorage for the cap with as little exposure of dentine as is consistent with strength, and if the filling is to be of gold, I make such use of cement, as will enable me to cover the largest surface of the dentine, and give to the cavity such shape, as the successful introduction of the filling will require.

It is as a lining in deep crown cavities that I have used cements most extensively and with the greatest satisfaction. For with cements, I am not only able to protect the dentine from discoloration and thermal changes incident to the contact of metals, but I can reduce the cavity to any degree of shallowness, and can usually so shape its walls, as to admit of the desired form which the kind of filling to be used most demands.

In preparing a cavity for amalgam I shape it with reference to the theory that fillings of this material tend to assume a globular form. This I do by cutting away as much of the enamel as the case may demand, removing all decalcified dentine from the walls and as much from the vicinity of the pulp as the case will permit; dry thoroughly and then, if I deem it necessary, apply over the region of the pulp a coating of varnish or a wafer of gutta-percha or a film from a rubber solution. Then mix the cement of such consistency as will allow it to adhere to the walls, introduce it into the thoroughly dry cavity and press to place with any conveniently shaped instrument at hand. Then, as it hardens, shape it with a ball burnisher, and endeavor to do this part so thoroughly that no cutting or scraping will be required.

Amalgam for such cavities, mixed dry, and driven to place by the aid of a mallet, and any excess of mercury absorbed by placing upon the filling a quantity of dry alloy and amalgamating it till the surface is dry, has been in my hands more satisfactory than amalgam fillings introduced in the ordinary way.

In preparing for gold I always bear in mind that there should be no pit, groove or inclination that is not in the line of the impacting force to be applied. Hence the spheroidal form that I seek when amalgam is to be used, I avoid when the filling is to be of gold.

In preparing for non-cohesive gold, a level floor and parallel walls are usually quite sufficient, but if cohesive gold is to be used, I prefer that the anterior wall slope somewhat backward, and that the margin of the cavity be beveled for a little depth, to prevent the possible misfortune of the gold drawing away from the walls.

If a starting point is necessary I cut a groove or drill a pit in the posterior aspect of the cavity where the wall joins the floor.

Properly introduced fillings over properly shaped cement foundations have been in my hands eminently satisfactory.

Crystalloid Gold.

By J. G. Reid, D. D. S., Chicago, Ill.

A demand on the part of the profession at large for a form of gold possessing extra softness, with more or less cohesiveness, has had the effect of calling to our attention a preparation of gold—clamoring for recognition—and which certainly has merit enough to win for it a permanent position in the operative department of dentistry.

A number of the foils do not possess the requisite amount of softness. They are usually harsh, unyielding, and do not work in an even manner under the instrument. The gold under consideration—crystalloid—has advantages not to be found in other forms. Under light malleting or hand-pressure its capability of spreading in a lateral direction is manifestly greater than that possessed by the foils.

A recognition of this important fact alone, establishes its utility at once as being most suitable for the frailest cavity walls. This gold can be used with greater success in connection with the matrix than any other gold containing the same amount of cohesiveness; this is no doubt largely due to the peculiar structural arrangement of its particles. When properly annealed it becomes extra-cohesive, and therefore can be utilized with equal advantage in the restoration of contour or the finishing of surfaces exposed to excessive mechanical attrition. Crystalloid gold packs very rapidly and evenly, so that a filling, when the instrument leaves it, is generally free from pits or undulating surfaces, a feature quite common to the lighter or heavier grades of foil, unless great care is exercised in finishing with them.

A few suggestions to those who may contemplate its use will be of some advantage, and may not come amiss to those who have already used it, but not in a satisfactory manner. Cut the gold into strips or blocks in size to correspond with that of the cavity. Do not anneal the pieces preparatory to starting a filling in any cavity, be it large or small, as annealing materially decreases its malleability. Do not attempt to start a filling with a fine pointed plugger; such an instrument will invariably puncture the gold and so break it up into such minute particles as to render the piece useless.

A plugger should be selected with moderately fine serrations and as large at the point as can be conveniently used in the cavity.

The first piece of gold should be introduced and "coaxed" with the instrument into the position where it is intended to be placed, and then pack it with hand-pressure only, follow this up with another piece in the same manner, and finally condense with a small point by means of mallet or hand-pressure, giving preference to the latter method. At the final finish of the filling the gold can be annealed if desired, but experience teaches us that it should be used just as it comes from the manufacturer to obtain the best results. Fillings made with this gold are to be finished in the usual manner and with the same care. If this is done well a surface free from pits and a beautiful edge, flush with the borders of the cavity, will be the result.

ANNEALING GOLD.

CHICAGO, Dec. 27, 1888.

Dr. Black:

DEAR SIR—What do you know about annealing gold?

Respectfully yours,
A. W. HARLAN.

CHICAGO, Jan. 3, 1889.

DEAR DOCTOR HARLAN—In reply to the above I may say that I have, in times past, made some pretty careful experiments that have involved the subject of annealing gold in the forms in which we use it for, in filling teeth; and I suppose that is the subject to which you refer, rather than the annealing of plate for the purposes of the laboratory. You will see at once that these are entirely different subjects. In the one case the annealing is done for the purpose of developing the welding property of foil, or other forms of gold, used in filling teeth; and in the other it is done for the purpose of rendering it soft and pliable in order that it may be more readily fashioned to the forms required in the construction of artificial teeth, crowns, etc.

In the early days of the use of cohesive gold for filling teeth, there was much discussion of the subject of annealing for the development of the welding property, and many theories were advanced to account for the effects of the annealing process, or the effects of heat on the gold, most of which have been lost sight of altogether as the years have rolled on. Now many of the young men who are entering the profession, or have entered it within the last ten or fifteen years, have no knowledge of this subject other than the fact that the gold must be annealed. I mean by this that the whys and the wherefores that so puzzled us years ago, and were supposed to require that gold be annealed in this way or that, seem no longer under discussion, and the result is that very many in the profession are not given to such accurate observation on this subject, as to be able to so anneal their gold as to develop the particular properties best suited to the case in hand.

It has seemed to me that to do this requires practical study in the laboratory of the finer chemical properties of gold. It is only by such a course of study that any one can come to appreciate the exceedingly delicate properties of this metal in its behavior toward other substances and compounds. This subject, while it involves chemical compounds and formulæ, relates to chemical affinities* far more subtle,—those affinities that stop short of the formation of compounds; those affinities that bring substances in contact but do not combine them. This is a field of chemistry that is almost totally neglected, and may be said to be in an undeveloped state, and yet it is the field that we must enter if we would understand the annealing of gold, and the best management of gold in the filling of teeth. Who ever heard a teacher of chemistry, or chemical physics, explaining why a glass rod immersed in water comes out wet. Easy enough. The adhesion of the particles of water for the glass is stronger than their cohesion for each other and a part of them break away and stick to the glass. Now try again. Take the wet rod and dip it into oil. Take it out and examine it. You find that the water has been displaced and the oil has possession of the surface of the rod. Well, why is this? Easy enough. The oil has a stronger affinity for the glass than the water and the latter is displaced. Take another case. A clean glass plate has stood in the air for some time. Place a drop of water on it carefully and you will see that it is inclined to stand in the form of a globule. It does not spread over the glass readily. Now try the experiment with alcohol instead of water. What now? The alcohol runs all over the glass at once. Why should it do so when the water refuses? We may say that the alcohol has a stronger affinity for the glass than the water and this causes it to spread. But is this all? Why is it that a needle will float on water when carefully placed upon it? The steel is much heavier than the water, and, according to the laws of gravitation, it ought to sink at once. Did it ever occur to you that there was something on the needle that had to be removed before the water would "take" to the steel, and that this "something" so enveloped the needle and enlarged it as to cause it to displace more than its own weight of water, and that this "something" must be displaced by the water before the needle will sink? What is this "something?" If you will study it closely you will probably be convinced that it is a film of air (which is probably especially rich in oxygen) that has condensed on the surface of the steel, and which being lighter than the water is sufficient to float the needle until it is removed by the water gaining possession of the surface. Here we see that both the oxygen of the air, and the water, have an affinity for the steel, and these are so nearly equal that there must be something of a struggle for either to displace the other and gain possession of it.

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*I use the word affinity here for the want of a better. It does not exactly represent my meaning, but I hope the context will make it clear.

Take another familiar case. Blow some air bubbles into water with a pipe-stem or a glass tube. These quickly rise to the surface and break. It may be that some of them remain on the surface for a time as bubbles. Why is this? Evidently some of the water has a tendency to adhere to the surface of the air bubble, spreading around it in a film that we can see, and imprisoning it. It sticks to the air as well as to the glass rod, and in the same way the air sticks to the water, and in the affinities of the different elements of the atmosphere for the water, that of the oxygen is the greater, so that element is condensed around every drop of the rainfall in greater quantity than the others, and brought to the earth to mingle with the air of the surface; hence the invigorating effect of the air we breathe just after a summer shower. But the youthful searcher after the hidden truths of nature, or after fun—no matter which—learns a thing or two about this. If we add an alkali to the water, we may increase the adhesion of the air and make larger bubbles, and we see the girls and boys using soap and blowing great bubbles that float in the air.

What has all of this to do with the annealing of gold? What has the condensation of carbon dioxide gas in charcoal to do with chemistry? There is no chemical union between the carbon of the charcoal and the carbon dioxide, yet there is an affinity the one for another that causes a great quantity of the gas to condense within the pores of the charcoal so that many volumes are reduced to one. This is said to be capillary attraction. What are these capillaries? Simply a multitude of minute openings that serve to increase to a wonderful degree the amount of surface on which the gas can condense. Otherwise there is no difference between this and the other cases of condensation upon surfaces of which we have been speaking, except in the material that serves as the occasion of it. The law of attraction is the same everywhere, but like other forms of chemical affinity the force of attraction differs with different substances.

Now, gold is subject to the same general laws; but it, like other substances, manifests peculiar affinities for certain elements, or compounds, while it does not attract certain others. One of the peculiar features of gold is that it does not attract the elements of the atmosphere, or attracts them so feebly that it is of little consequence. However, carbon dioxide, which is always present in traces, is feebly attracted by it and condensed in some degree, but sufficiently so to cover it and prevent two pieces of foil from sticking together, even under the blows of the mallet, if it has been long exposed to the air. For this reason gold loses its welding property when it has been exposed for some time; yet, by fairly close wrapping, this property can be retained for a considerable time, though not permanently. This, however, is not the only gaseous substance that affects in this way the welding property of gold. Indeed, there are many others which act in the same manner; that is, by being attracted to the gold and condensing on its surface. This is very readily shown in the laboratory by suspending a rope rolled from a sheet of foil, the welding property of which has been found good, in a jar of chlorine gas for a few hours. At the end of this time it will not weld at all. Now, suspend this in a jar containing ammonia for an equal length of time. If the gold is now examined closely, and compared with that which has not been so treated, a very slight change in color may be noted ; but nothing that would ordinarily be observed. The welding property is still entirely in abeyance. It will not weld together any better than so much tissue paper. Now, bring the gold into the flame of the annealing lamp, and as it approaches a red heat it will be seen to give off a cloud. *It smokes.* If, while annealing this gold, a cold porcelain slab is held just above it a sublimate may be collected in considerable amount, which proves to be ammonium chloride. Now, an effort to weld the gold will show that the welding property is perfectly restored. The surfaces of the gold have been cleaned so perfectly that they may come in contact and cohere. Metals cohere or weld when clean surfaces are brought in contact. There are many other gaseous substances that are frequently present in our atmosphere that condense on gold foil in the same way, a few of which cause the gold to *smoke* during the process of annealing. Some of these are compounds of gases which combine in the annealing process to form sublimates, as in the case of chlorine and ammonia, while others simply impart a peculiar color to the flame. Occasionally there are substances in the atmosphere that will impart their color to an alcohol flame, or that of a bunsen burner, that have nothing to do with the gold that is being annealed. Of these the yellow flame, indicating the presence of some of the compounds of sodium in the form of fine dust, is oftenest seen.

There are many substances that are occasionally present in the atmosphere that are fatal to the welding property of gold, for the reason they cannot be removed by the annealing process. Of these the gaseous compounds of sulphur, and of phosphorus, are the most dangerous. When these have collected in some quantity, and have remained for some time upon the surface of the gold, they cannot be removed by annealing, and the welding property of the foil is permanently lost. For some years I had a chemical laboratory in a room adjoining my office which gave me much trouble by spoiling my foil. I found that by keeping my gold in the presence of ammonia it was perfectly protected. All that was necessary was to keep the gold drawer smelling of ammonia. Ammoniated foil is very convenient for general use. It works perfectly, non-cohesive when unannealed, and the welding property is all the more perfect and uniform when it is annealed.

The manner of annealing gold is very important. To do it perfectly—so as to develop the welding property in the highest degree—*is a matter of time* as much as degree of heat. My observation is, that many operators whose manipulation is in every other way very perfect have their fillings flake because of imperfect annealing. The substances that collect on the surface of the foil are not immediately driven off when the gold is heated, but are removed slowly. The rapidity will always depend on the degree of heat, however. A gold whose welding property is perfectly developed by exposure to 800° Fahr. for fifteen or twenty minutes may not weld perfectly after a momentary exposure to a full red heat. The degree of heat required will differ with the exposures to which the gold has been subjected. I found that gold that had hung in a jar of carbon dioxide for twenty-four hours, regained its welding property with much slighter annealing than gold that had been subjected to ammonia for the same length of time ; but when the time was extended to a week the case was reversed. There are other substances that are still more difficult to remove than these, and still others that cannot be removed without melting the metal. Ordinarily we are unable to tell one of these from the other ; but by close observation of the welding of the gold we will be able to determine whether it is welding perfectly or not, and knowing that a longer exposure to heat will generally succeed, we may be able to perfect the welding property.

The best results in annealing are undoubtedly attained by placing the foil as prepared for use on a mica slab that is properly supported over a bunsen gas flame, or that of an alcohol lamp. This should be so placed that the flame will keep the slab heated very nearly to redness, just so that it will show something of a glow in a dark corner. The gold for use in a given case may be placed on this and kept hot while the manipulations are progressing, and thus time will be given for the most perfect development of its welding property. The lamp should be so arranged that the slab may be heated to a full cherry red in case the gold in any particular case does not work satisfactorily. Some years ago this manner of annealing was practiced considerably, but of late seems to have fallen into disuse, for the reason, I suppose, that it is not quite so convenient as the foil-plier plan. This latter plan may be said to be the one universally used at present, and is so generally known that it seems unnecessary to describe it further than to say that each piece of gold, as it is wanted for use, is caught up by the pliers and passed for a moment into the flame of the annealing lamp. This plan of annealing is capable of giving very fair results if carefully done, but is subject to much abuse. In the first place, in the lighting of the lamp, if it be an alcohol flame that is used, the lighted match is sometimes brought in contact with the wick and leaves a bit of the phosphorus upon it to give off its fumes and injure the gold as it is being annealed. This form of injury is sometimes sufficient to spoil an otherwise fine filling, especially where building up the lost portion of a tooth is being done. Another difficulty that I have often noted is that operators are liable to take too much of the gold between the points of the pliers. It will at once be seen that in this case such portion of the gold escapes annealing, the points of the pliers not being heated sufficiently. These unannealed portions will cause the surface of the filling to flake, or to pit, often very badly, although every other part of the operation be ever so perfectly done. In annealing in this way the very smallest portion of gold possible should be included between the blades of the pliers, and, in cases of unusual importance, as in building down a thin corner of an incisor, where a very minute failure of the weld might cause a break, it is best to catch the gold in another place and repeat the annealing process in order that every portion of the gold may be annealed.

Another very common difficulty is insufficient annealing. Very many operators anneal too quickly to obtain the best results or the greatest perfection of welding. I should say, however, that it is not at all necessary that all parts of every filling be made with perfectly cohesive foil, even those parts that we do not wish to make of strictly non-cohesive foil. We may often work with greater ease, more rapidly, and gain better results by filling large parts of certain cavities with a gold the welding property of which is but slightly developed; and, for this purpose, it is usually best to just touch the gold to the flame, annealing more or less as occasion may require. But when building up the lost portion of a tooth, or forming a surface that is to stand hard usage, the gold should first be placed above the flame of the lamp and gradually brought down until the entire pellet is seen to glow, but care must be had that there is no trace of melting. This latter is as fatal to good results as insufficient annealing; but a full cherry red, gained slowly, will give the most perfect welding and a surface that will best stand the wear and tear of mastication. Switching the gold back and forth through the flame of the lamp is very bad practice. The operator should always see whether his gold is annealed or not, also that every part of it is annealed. In switching the gold back and forth it is liable to happen that a block or cylinder is not well annealed, the weld fails at an important point and brings chagrin to both operator and patient.

The annealing of platinum gold need not differ in any wise from the annealing of the ordinary foil. The welding property is developed only in the gold covering the platinum. I do not mean to say by this that the platinum will not weld with the gold when exposed in the process of manipulation; but it must be remembered that it is only the surface of the gold that needs cleaning, and the platinum has no exposure. In working this combination, particularly that which has the largest amount of platinum, it should be remembered that platinum attracts oxygen very strongly and loses cohesion very rapidly; therefore no surface showing this metal should be left exposed longer than is actually necessary. It is the attraction of oxygen to platinum and the failure of heat to remove it that prevents us from making a foil of it that will weld.

This represents something of what I know about annealing gold for the purpose of filling teeth. In writing this I am repeating in different words much of what I have written years ago; and I may say that any who may wish to pursue this subject further will find a paper on the subject in the volume of the *Missouri Dental Journal* of 1869, which was read before the Illinois State Dental Society. This was republished in the *American Journal of Dental Science* about the end of the same year or the beginning of the next. Also, another paper read before the New York Odontological Society in 1874 and published in their transactions. This was also republished in the *Dental Cosmos* for the same year. Yours, truly,

G. V. BLACK.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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PROSPECTUS 1889.

The DENTAL REVIEW presents its compliments and wishes its many readers a "Happy New Year."

Since its establishment, November 15, 1886, the REVIEW has completed two volumes consisting of twenty-six numbers. The current number begins Volume III, and the third year of its existence.

In entering upon another year the REVIEW sees reasons for self-congratulation as well as for congratulation of its supporters. It is the usual purpose of a "prospectus" to set forth the scheme and policy for a coming year—rather than to give opportunity for rhetorical flights or indulgence in self-praise. But as to seek out and give prominence to one's best actions, and to analyze motives is helpful to the individual, so it may be profitable at this time for the REVIEW to survey itself in the rosy light of self-approval.

The reader is an equal participant in this felicitation, as to him more than to all other causes is success due.

The REVIEW is proud of its record. It feels no hesitancy in confessing to a sensation of deep satisfaction in having thus far exerted a measurable power for good in promoting the growth of the dental profession. To its shortcomings it is not blind, and for them it begs indulgence. Unremitting study of the needs of the practitioner and a lofty conception of the mission of dentistry will go far to remedy such defects in the future.

The good name the REVIEW bears in America and foreign lands, the scientific reputation it has earned among its contemporaries, and the appreciation of readers give it abundant promise of greater usefulness.

The different departments of the REVIEW remain, and one new one is added which will be headed *Practical Notes.* This department will in its location precede *Memoranda.* It will consist of paragraphically arranged items of useful application in every day work at the chair and work-bench. These will be collected from all sources and their aim will be practical utility. The wisdom of the policy to give special prominence to society proceedings is attested to by experience, and by the fact that investigators properly find a dental society the best medium through which to present their work. The department of "Proceedings of Societies" aims to contain fresh reports of the scientific business bereft of superfluous or irrelevant matter in which valuable transactions are too often masked.

The high standard of excellence which has invariably characterized THE REVIEW will be fully maintained. The old contributors will continue their writings, and a series of articles will be given by Dr. Edmund Noyes on a practical subject. His papers will be continued through several numbers.

With the burden of its business affairs transferred to other and fully competent shoulders without the sacrifice of editorial independence; energized and inspired by past achievements and present confidence, the REVIEW begins A. D. 1889 with largely increased possibilities for success in its holy toil for the "Advancement of Dental Science."

INTERNATIONAL DENTAL CONGRESS.

As the time for the meeting of the first distinctly International Dental Congress approaches, interest in the ultimate success of the project is becoming more and more apparent.

For some obscure reason, the dentists of the United States have not yet exhibited that magnanimous support of this subject of dental interest for which the profession is everywhere so favorably known. Many seem to fear taking a firm and positive stand in regard to the matter. Others are awaiting an expression from the dental press; some again are of the opinion that a convocation of men who practice dentistry exclusively would not receive the respect and honor, which would be theirs if considered a part of a medical assembly. While this is an error, it is at the same time an insult to the good name of the profession.

The Dental Review is the first journal, published in the English language, favorably commending the call for an International Dental Congress. Its editorials in regard to this were severely attacked by *The Journal of the American Medical Association.* It was imputed that the International Dental Congress was called for the purpose of opposing the dental section of the Tenth International Medical Congress, at Berlin, in 1890, when, in fact, the call for the former was promulgated before the latter's place of meeting had been decided upon. Many men who cherish the welfare of the profession, but who, unfortunately, opposed the Dental Section of the Ninth International Medical Congress, yielded their preference and desires gracefully, when it was said : "let us have the Dental Section in the International Medical Congress now, and then we will all work in unity in favor of an International Dental Congress.

We think that any differences of opinion that exist ought to be modified so as to insure united action when a matter of as vital importance confronts us. None will gainsay that a meeting of dentists in Paris, or any where else this year, can do nothing less than some good to the profession. While our personal preferences would have led us to choose an American city for the first International meeting of dentists, we gracefully submit to the wishes of our Trans-Atlantic confreres and yield the point, in the hope that when America is celebrating the 400th Jubilee of this continent's discovery, in 1892, we may witness on the shores of Lake Michigan, in a city, which in many respects, is one of the most wonderful of the world, the meeting of the Second International Dental Congress.

As Americans and dentists, our pride alone would impel us to do all that lies within our power to make this year's meeting at Paris a success. The Dental Review will freely and cheerfully do what it can to attain that end. We cast our fortune with the Frenchman, irrespective of the past or future of any other organization. The staff of the Dental Review is composed of practicing dentists, hence it may be pardoned for looking at things from a *dental,* and at the same time a practical standpoint.

It is true that Germany will not participate in the Paris Exposition—but Germany is not the world ; as free Americans we could never allow our professional welfare or our individual opinion to be subsidized to the whims of a government—much as this regretful step must be taken by German dentists.

France will, as usual, have a grand affair, a magnificent Exposition. The International Dental Congress will be under the immediate control of the government itself, the Minister of Commerce and Industry, who is the Governor-general of the Universal Exposition, on December 4, 1888, appointed the following named committee of organization: MM. Blocman, professor at the dental school of Paris; Brasseur, president of the Odontological Society of France, and Director at the Dental School of France; Chanoin, professor at the Dental School of Paris; Crignier, formerly vice-director at the Dental School of France; Damain, vice-director at the Dental School of France; Dubois, professor at the Dental School of Paris; Dubrac, former secretary-general of the Odontological Society of France; Duconronneau, member of the Odontological Society of France; Gaillard, vice-president of the Odontological Institute; Godon, secretary-general of the General Association of the Dentists of France, vice-director of the Dental School of Paris; Kuhn, Member of the Council of the Dental School of Paris; Marchande, secretary-general of the Odontological Society of France; Papot, superintendent of clinics at the Dental school of Paris; Poinsot, professor at the Dental School of Paris; Pourchet, secretary of the Odontological Society; Ronnet, professor at the Dental School of Paris; Saussine, vice-president of the Odontological Society.

An abler and more honorable body of men could nowhere be found, and we trust that the profession in the United States will give all the aid and encouragement they can to these gentlemen. Dental Societies should elect delegates to attend the Congress, and by all other avilable means should Americans acquit themselves honorably in a matter, which so largely influences our welfare, and which, when viewed from any aspect we may choose, will eventually redound to our credit.

ENGLISH QUACKERY.

Our English *confreres* are becoming more and more wrought up by the latest expedient resorted to by quacks in that country. It is the present fashion of the British charlatan to advertise "American dentists in attendance" and "American methods practiced."

The injustice this works to the English profession in the minds of the unthinking public is as apparent as is the harm it does to the name of American dentistry.

The REVIEW has already (See editorial in August issue, Vol. II) given utterance to its protest and urged action in this matter, and again we would voice the feeling of every honorable American practitioner of dentistry in giving such practices our unqualified condemnation.

American dentists may or may not be entitled to the greater skill sometimes accorded to them by foreigners—that is a question it is not profitable or proper to discuss at this time and place; they are, however, proud of their achievements in the history of dental science and jealous of the good name of American dentistry which is now threatened, or even already besmeared.

The facts in the matter are that the enterprising English quack dentist finds that anything announced as "American" is the most profitable to him at this time. Later it may be something else. The undiscriminating are the more easily lured by this catchword because Yankee ingenuity has already made itself conspicuous in other lines.

In order to give the color of truth to such advertisements, American dentists, usually young graduates, are imported and employed under a strict contract forbidding them to establish an individual practice. It should be said in justice to these employes that they are no doubt well-meaning young men, innocent of inflicting injury on others, and ignorant of the results such a step entails upon themselves or their profession. As recent graduates they are usually inexperienced, and any one but a "recent graduate" himself can realize how insufficient a college education is to prepare a man to cope with the problems of every-day practice, be he a graduate of an American or an English school. This is as true of medical as of dental education. In one instance, to our knowledge, the employe was not aware of the nature of his employment, the true facts being withheld. And not always does so young a practitioner find means to ascertain the true character of the association he is about to form. Besides an excellent salary is offered, which is a powerful appeal to a beginner, with all the allurement and *eclat* of a term of years to be spent in glorious England.

It seems vain for the English profession to call upon America to put a stop to this prostitution of her name except in so far as young men can be dissuaded from taking position with English charlatans. Let the names of these pretenders and impostors be known to us.

To aid in the accomplishment of some good the REVIEW calls upon the faculties, and especially the Deans of Colleges, to distinctly and emphatically, and repeatedly, impress the minds of their students with the evil consequences which follow a disreputable alliance; the lasting blot it puts upon the professional life of the individual, and the greater danger that he may himself degenerate into a quack.

STAND BY YOUR OPINIONS!

The lack of stamina at times shown by dentists, in allowing the desires of patients to influence their good judgment, often resulting in the loss of the patient's confidence, if not the patient himself, has been demonstrated in several cases that have recently come under our notice, and it is the more deplorable on account of the invidious comparisons made against the whole profession. A patient who presumes to know all about his case, and what ought to be done, without asking the dentist's advice, should be quietly and firmly told that the dentist is the best judge of what should or should not be done; and in the majority of cases such conduct will redound to the benefit of both, even though the first result is a pecuniary loss to the practitioner, by reason of some other less positive dentist being ready to do just what the patient wishes. There still exists a class of people who think that a dentist is not much more than a barber or butcher, and all that is necessary in consulting him is to express their wish, pay a certain price and obtain their desire. Then, there are others who are willing to make any sacrifice to gratify some foolish whim or fancy; and still others who allow friends to influence their will, and it is this latter class that make the fight hard for the dentist, for he often has to oppose an army of relatives and friends, against whom his arguments are of little avail.

In the first class—the person who has not yet given proper credit to the profession; often-times a good piece of advice and proper arguments will result in securing a sincere friend to the dentist, who will do much good in trying to correct the erroneous views once held of the profession.

In the second class are the ones capable of doing the dentist the greatest amount of injury. They see nothing but the present, and remember not the past, so that the fault of their own willfulness may, six months or a year later, be easily laid on the shoulders of Dr. Blank, "who did so and so, when he ought to have known that it was wrong, or of no good." They usually do the greatest amount of talking, and oftentimes render the dentist who has refused to comply with their demands a service, by telling the more thoughtful friends "what Dr. Blank would *not* do."

The other class is the worst of all to contend with, and it is this that often makes the poor dentists' life a burden, and is probably one of the trials we all have to undergo. There is, however, but one proper course, and that the conscientious execution of carefully matured plans, after all the points of the case have been studied.

Any departure from this will surely be regretted by both patient and operator, especially if it be such as to conflict with the opinion of the dentist. By a firm stand is the sure progression of the profession in these matters to be established, in not only the eye of the public but also in the estimation of dentists themselves.

CASH PRIZE.

Last year we offered a prize of $25.00 for the best paper submitted on bleaching teeth. We did not receive ONE response. This leads us to think that no original work is being done in this direction. In order to stimulate some one to engage in work of this character, we renew the offer, as follows: We will pay $25.00 for a paper of ten or more printed pages, detailing a method of bleaching teeth not now in vogue. The paper will be examined by Drs. Geo. H. Cushing, E. Noyes and W. B. Ames. The paper may be sent direct to either of the above gentlemen. The offer will hold good until July 15, 1889. If two meritorious essays are received, $10.00 will be paid the author of the second paper should we use it in the DENTAL REVIEW.

DOMESTIC CORRESPONDENCE.

DENTAL ETHICS.

NEW YORK, Dec. 31, 1888.

To the Editor of the Dental Review:

DEAR SIR—The societies hereabout all having failed to hold public meetings this month, I am obliged to take my text from a meeting of the Massachusetts State Society, held in Boston, which I attended. There were several papers read, but with the exception of one by Dr. Baker relating to Cleft Palates, they were more incidental than dental. (No pun intended). The point of greatest interest, however, foreshadowed in the president's address, and soon after brought before the meeting for action, was whether the society should adopt the Code of Ethics of the American Medical Association, and thereby gain the distinguished privilege of sending delegates to the next convention of that body.

For awhile it seemed that all would go as the officers of the society wished, and the code be adopted. At the last minute one member had the courage to rise and announce that if the society passed the resolution to adopt, he wished it understood in advance that as he would vote against it, he would not feel bound to live up to the requirements ; he did not choose to subscribe to any set of rules which directed him to practice only in one school of medicine. The gentleman is an advocate of Homeopathy. A few timely American Eagle remarks about being "true to our own profession, and retaining our liberty, etc., etc.," elicited such applause that the advocates of the resolution, sniffing the breeze of the rising storm, hastened to shorten sail, and under some suddenly discovered rule that the pending discussion was out of order, had the matter "laid on the table."

There is some food for thought in this incident. It was stated that the Chicago (or Illinois State) Society had already taken the step, and that the Massachusetts would be the second to "crawl under the wing," so to speak, if they would only crawl ; but they did not crawl, and perhaps they will live through the winter nevertheless.

Supposing the question of adopting this code to be before us all, as dentists, throughout the States, let us consider it a moment. Before making any movement, a good General studies the situation ; he calculates the *necessity* of such manœvre, the possible *advantages*, the possible *losses*, and the chances of *retreat*, and his probable condition thereafter.

Is there, then, any necessity for dentists to enter into closer general relations to medical men? No, decidedly no. What we need is, not admission to the meetings of medical men, and a right to share in their councils, but rather, such a proportion of medical knowledge as would make us less mechanical in our limitations, and more able to diagnose and treat diseases which, appearing in the mouth and within our allotted sphere of action, nevertheless are really but expressions of constitutional disturbance elsewhere. In a nutshell, the necessity is for more knowledge, not more societies. We have more societies now than are either needed or useful, (of this some other time).

We then come to the second consideration: What would be the advantages? Would there be any? Yes. The first and foremost would be that we would teach the medical men that we, and not they, are doing the greatest work in the healing art. That prevention is better than cure, and that as two-thirds of all our bodily ailments come from non-assimilation of food stuffs, in materially aiding that important process, by making mastication more thorough, we are doing a great work. We would teach them that dentistry means more than "pulling out snags," and in the knowledge they would thus acquire, they would undoubtedly in the future send us more patients. They would come to learn too, that sometimes a dentist might cure, in a short time, a disease which would baffle them for months—for example, facial neuralgia as a concurrent symptom of pyorrhœa alveolaris (a disease scarcely recognized by the medical world.) By association with them, we too would learn much, chiefly self-respect. I do not mean egotism, that we have in superabundance, and is the article we least need. Self-respect is another thing. It means that we should sit in council as a body of scientists, not as a social body convened for pleasure. That is the one thing in my opinion which most militates against the usefulness of our meetings. The majority seem always in a hurry. Adjournment, whenever suggested, is always vociferously agreed to, and even before the motion is carried, the men are on the move to escape. That is just the word. They seem always anxious to escape. This is not only unscientific; it is indecorous, and is the outcome of this one fact: We are egotists. We go to teach, and not to learn, the result being that we neither teach nor learn. Of course there are men who are exceptions, of them I do not speak.

Of actual knowledge we would gain next to nothing. Undoubtedly there would be knowledge imparted, but we can get it without joining the medical societies as members. Individuals would scarcely join more than one medical society, and for less money they could subscribe to one medical journal, and have the reports of several. But the majority would not do either, since the majority of dentists, to their shame be it said, neither belong to dental societies, nor read dental literature. They are workmen, not scientists. Those of us who are entitled to the name student, will undoubtedly become scientists without joining the medical societies; moreover should they wish to attend medical meetings, they may do so, as they are as open to dentists as ours are to medical men.

Would we lose anything? I think so. We would undoubtedly lose our liberty, as the Boston man pointed out, but what is of more importance, we would lose our identity. That is always the result of amalgamation. I hear some one say "Rot!" Well, yes, that is a good word, and I say we would rot. A gentleman ably wrote in your journal this month on the subject of Dentistry not being one of the professions. That may be and probably is so, though in the last decade it has begun to be otherwise considered. But if we amalgamate we are lost. Who can take one of our amalgams, and tell whether there is any gold or platinum, or silver, in it, at a glance? They may be there, but it does not appear. The Medical Amalgam already contains a number of specialists, gynecologists, surgeons, opticians, etc., etc., but when will any of them ever become separate professions? Then why should we lose our identity and forego our opportunity of becoming, if we are not already, one of the learned professions, and in exchange take the humbler place of being the speck of dental gold in the medical alloy. We are told that we need more knowledge of general medicine. Well, and what of that? It is true, but will we get it by affiliation only, or will we need to study? I think there is but one way to obtain knowledge, and that is personal application, and if he has not that, the dentist will not acquire it by signing his name to a medical society roll, or to a medical code. If we need more knowledge, we need not feel obliged to go to the school of another profession to get it; that would make the road harder, and no better. The right way is to force our own colleges to give it to us in our dental course; all that is necessary of medicine, even to the whole of it if need be, should be included in our dental curiculum.

The last consideration is retreat. That is so evident that we need not discuss it. If neighbors are friendly living in adjoining houses it is a dangerous experiment to try living under one roof. Should a time come when they would wish once more the separate residences, they never would again be as friendly as they were before. Metals which have been amalgamated, are rarely separable without loss.

I think before we subscribe to the code of the American Medical Association, we should inquire why it is that the State of New York is not represented in their councils. That is to say, they lost that portion of their delegates, and are now organizing societies in this State in order to show a representation from the Metropolitan district. These recruits are of course from the ranks, the older societies in the State holding and retaining all the celebrities. This important split was occasioned by this very question of code. The "New Code," or New York men, are more liberal in their views than the old fogies, and allow conferences with men of other schools. Hence the division, and yet in Boston we were blandly told that the objectionable rule (to dentists) is practically a dead letter.

I intended to speak of some of the faults of our code, but have already occupied too much space. I will however touch on what I think an important point. There is a publicly declared duty which one dentist owes another, to-wit, not to influence a patient away, which is constantly being ignored in private. Within the year a dentist in New York reported to his society that another member had taken a patient from him, infringing the code. It seems he sent a patient to the brother dentist for special treatment. This done the patient desired further service, declared her preference for the second dentist, and he did her work. This was the grievance. The matter has been amicably settled. It bid fair at one time to provoke a public discussion before the society, and had it done so I intended to relate that the plaintiff, once to my knowledge told a casual acquaintance that her dentist had retired from practice and left the city, and so induced her to have him serve her, whereas the other dentist was and is still in practice, "at the old stand" where he has been for many years. The patient subsequently discovered the fraud and reported it to her dentist. In a case where a patient has been served by two dentists, and desires further attention there seems more involved than the interests of the dentists. Our patients are not our property. They have individuality, and should be allowed full liberty in choosing who shall receive their money for services rendered. My Webster tells me that ethics means "The science of human duty," and I am pleased at the word "human" contained in the definition. Whilst we owe a duty to our *confreres* we owe a duty too to all of our kind. If we all were honest we would need no codes; as the necessity then for rules is due to the fact that we are not honest, the rules should be framed so that they simply condemn, and aim at preventing, unjust actions, whether it be to patient or dentist. If a code allows me to prevent a patient seeking service elsewhere after once being in my hands, that is not a just law. All that the law should stipulate is that no dishonorable methods be used in pactice. In the first case above cited, I do not think the defendant was guilty of any great wrong though he probably neglected an act of courtesy. For example, a well known dentist in New York sent a patient of his to a neighboring dentist, for treatment of pyorrhœa alveolaris, which was cared for. A year later the patient appeared at the office of the second dentist for further service, and declared a preference for him. The dentist wrote a polite note explaining the facts to dentist number one, and in reply of course received a note, authorizing cheerfully what he could not have prevented. The man who was the plaintiff however, in my opinion acted in a way which should have made him amenable to punishment, in the other instance which I related, as he made a false statement.

Yours truly,

RODRIGUES OTTOLENGUI.

LETTER FROM NEW JERSEY—PARR'S REMOVABLE BRIDGE-WORK.

To the Editor of the Dental Review:

Dear Sir: The New Jersey State Dental Society has for a long while had a good name for the excellence of its meetings—the high character of its clinics, and above all the hospitality and good fellowship of its members. This year's meeting was no exception, but if anything was an improvement.

The attendance, both of Jerseymen and practitioners from other States, was larger than ever—the exhibits more varied, and the clinics more numerous and better attended. A noticable feature of late has been the fact that but few members of the New Jersey society are "on the list," and this year I believe that on the programme there did not appear among the essayists or operators the name of a single Jerseyman. At the same time the programme was larger than usual, the attendance greater, and all the attractions beyond expectation.

The fact that the society was able to do all this without any help from its own members, and to secure, as it did, some of the very best talent in our profession, shows conclusively that they are a live body of men, and know their business. When, however, it came to the discussions, the members came in for their part of the work and kept the ball rolling.

Time will not permit of my going into an elaborate description of all that was done, but to some of the more prominent gentlemen present I will briefly allude.

Prof. Sudduth gave a very interesting paper on "The Biology of Life," illustrated with micro-photographs which drew and held a very large audience at one of the evening sessions. In the discussion which followed, more resembling a "conversazione" than anything else, the best of good feeling was evinced, though those who took part differed most radically in regard to what the microscope revealed to them.

Among the many things exhibited at the clinics, and which attracted much attention, was a practical piece of removable bridge-work. It was from the hands of that well-known and zealous worker, Dr. H. A. Parr, of New York City. It was made for a brother dentist, to be exhibited on this occasion, and was inserted during the meeting.

The crowns or caps for the bridge anchorages are made as usual. To these are attached gold bands, so as to form longitudinal slots or grooves on each cap, into which a spring may be inserted. This spring is heavy, and being attached to the teeth forming the bridge —a spring at each end of the bridge—when placed in position, the springs going down into the slots in the *permanently attached* crowns, the work is as firm and rigid as could be wished apparently, and the patient can remove and cleanse whenever desired. It is claimed that it will hold plates of all kinds—that no plates containing air chambers, or with clasps, need be used; that particularly in the case of lower teeth—diverging and converging—where often teeth were extracted to insert artificial ones, this method can be used nicely, when other bridges fail. That it is a valuable method no one can doubt.

There are several features about this work which seem to merit attention.

It is practical. It is easily removed. It is as cleanly as can be expected.

So much has been said against the practicability of *removable* bridge-work that when one has given us something that bears on the face of it such evidence of usefulness, we ought to give credit where credit is due.

Many have objected to bridge-work on account of its not being cleanly enough to suit them. That this meets their objections is positive. Thank heaven we have such fastidious operators to keep our inventive talent at it. They have been a continual inspiration to others to find some way out of their trouble, and this Dr. Parr thinks he has accomplished. Viewed from a hygienic point of view he has certainly given us something of value.

It is so nicely adjusted that the patient can readily remove it and replace it without trouble.

This is of great advantage in sickness. When very ill it has been found that bridge-work was very uncomfortable to some and by reason of inability to give proper attention to cleansing the mouth the work has become very annoying. With this method of Dr. Parr's this difficulty is entirely obviated.

Dr. Parr demands nothing but a just recognition of his services. Whatever of value there may be in this he gives it to the profession freely, and hopes it may prove one way of circumventing all other methods.

Implantation was the burden of at least two important clinics. Important outside of the work, because of two incidents. In both cases the patients were dentists. In one case there was decided evidence of toxic effects of cocaine, so much so as to attract considerable attention. In the other case the gentleman submitted himself for a few moments to the manipulations of a lady of the Christian Science persuasion, just before the operation was performed. He said he felt absolutely no pain. He had never met the lady before, and was anything but a believer in their methods.

Come to Jersey next year, brethren of the West, and we will try to do you good.

Let me say in closing that many of us here in the East thoroughly appreciate and agree with the kindly remarks made by the English and French dental journals about the REVIEW, and know that it has not lost the position it took with its first issue—by the side of the *Cosmos* and *Independent Practitioner*. It is always welcome. "FREE LANCE."

UNIVERSITY OF MARYLAND—DENTAL DEPARTMENT.

BALTIMORE, Dec. 24, 1888.

To the Editor of the Dental Review:

DEAR SIR—In the December 15th number of DENTAL REVIEW, appears a letter from Dr. Fred A. Levy in regard to the action of the "National Association of Dental Examiners" toward the University of Maryland, Dental Department. In Justice to said department and also to Dr. G. F. S. Wright, President of South Carolina State Board of Dental Examiners, will you please publish the reply of Dr. W. to Dr. Levy's assertions, as follows:

GEORGETOWN, S. C., Nov. 15, 1888.

Professor F. J. S. Gorgas, Dean of Dental Department University of Maryland:

DEAR DOCTOR—The committee of which Dr. Levy writes whose report he says I signed, held no meeting when I was present and the final action was as I stated. The roll was called, and as the Secretary called the name of an institution, the Presiding Officer, Dr. Waters, would ask if there was any objection, and if there was nothing said, he would announce: "*No Objection.*" I kept a score of the roll, and no one objected to the University of Maryland Dental Department. I have written this to Dr. Waters, who has written to me and stated his impression of the action. Dr. Levy says the proceedings will be published in the *Independent Practitioner*. I am not in possession of any information except rumors from the Association of Dental Faculties; of these the impression made was not unfavorable to the school of which you are the Dean.

That the Dental Department of the University of Maryland was objected to is a mistake, it was not. No school in Baltimore was, but a Washington school did have objection made and was turned down. I am very respectfully,

G. F. S. WRIGHT, D.D.S.,
President of S. C. State Dental Examining Board.

Assuming that Dr. Levy is correct in his statements, and also in the minutes of the Louisville meeting (although Drs. Wright and Wardlaw state the contrary,) such action is not in accordance with a standing resolution of the "National Association of Dental Examiners," which recommends to all State Boards to confer with a college whose diplomas are questioned before publishing it as derelict, to the end that no injustice may be done, particularly to those who have honestly earned their diplomas from such institution.

The spirit and the letter of this resolution is set at naught if the President and Secretary of said Association are correct in their reports of what took place in regard to the University of Maryland Dental Department, and Dr. Gorgas in his letter to Dr. Waters very justly asks: "Have there ever been any charges brought against our dental department for failure to comply with any of the requirements of the State Boards of Dental Examiners, or of the American and Southern Dental Associations? I have never heard of any, and defy any one to prove that we have not strictly complied with all such requirements.

Does not the fact that no less than three of the five members composing the Maryland Board of Dental Examiners have recommended students to our Dental Department for the present session, prove that the majority of the members of the Maryland Board of Dental Examiners, are satisfied with our course of instruction and recommend it?

Further: Is there any clause in the Maryland Dental Law that empowers you to act, in regard to said law, independent of your colleagues? For I have been informed that no meeting of your Board was held at which you were appointed its representative to the Louisville meeting, and that no instructions were given you to omit the name of the "University of Maryland Dental Department" from the list of schools whose diplomas were to be recommended. Was any intimation of such action on the part of the *seventeen* who met in Louisville, ever given to the faculty of the Dental Department of the University of Maryland? I, its Dean, never heard of it until it appeared in the October number, 1888, of the *Dental Cosmos*.

Finally, I ask, if it was intended by the *seventeen* members composing the Louisville meeting that printed circulars containing the names of the schools whose diplomas are recommended to the various State Associations, and to which is attached the name of

"Fred A. Levy," Secretary, Orange, New Jersey, should be circulated among the students at present attending the "University of Maryland Dental Department," *as has been done*, for the purpose of injuring our department? Several of these circulars addressed to our students, are now in my possession, but like all such mean acts, this one has failed in its purpose.

The interests involved and the gravity of the situation prompt me to present this simple statements of fact. (The remark of a delegate at a meeting of the National Association of dental examiners, that he was "glad to see the quarrel between the Baltimore colleges" illustrates the "true inwardness" of the effort to depreciate and ostracize the University of Maryland Dental Department, although in the suitably expressive parlance of Dr. Waters that "school is not the only one left out in the cold."

Dr. Waters was not duly authorized to represent the Maryland State Board of Dental Examiners at the Louisville meeting. He could not therefore and in point of fact, did not, present a "certificate from the proper officers" and every member of the Maryland Board of Dental Examiners, except Dr. Waters, has said individually that Dr. Waters was not an accredited representative of the Maryland Dental Examiners to Louisville. When the President of the Board went to the meeting at Niagara in 1884, and when the Secretary went to the meeting at New Orleans in 1885, they were duly commissioned under seal, and money appropriated to meet their expenses.

As editor of the *American Journal of Dental Science*, Dr. Gorgas did not refuse to publish Dr. Levy's letter as it appears in the DENTAL REVIEW, as a reference to the December number of the former journal will show. Respecfully, etc.,

FERDINAND J. S. GORGAS,
Dean of University of Maryland, Dental Department.

CHICAGO, Dec. 26, 1888.

To the Editor of the Dental Review:

DEAR SIR—To convert jewelers' broaches into superior dental broaches, dip a dozen into sperm oil, lay on a sheet of tin or brass, ignite the oil and allow it to burn off. This can be repeated until any degree of softness occurs. This is equally valuable in giving spring temper to small instruments. It may be old but it is good.

Respectfully,
DANIEL B. FREEMAN.

REVIEWS AND ABSTRACTS.

TRANSACTIONS OF THE ILLINOIS STATE DENTAL SOCIETY, AT THE MEETING HELD IN CAIRO, ILL., MAY 8 TO 11, 1888.

A glance at this volume provokes first, a criticism of being very poorly bound; some charity may be extended for the printing, but if the reader can sum up courage sufficient to struggle through the reading matter without producing a well-defined case of acute iritis his optics are stronger than those of the reviewer.

The words "applause," "laughter," etc., which greet the eyes of the reader so frequently throughout the work, remind one quite forcibly of the outbursts of enthusiasm frequently manifested by the "Gods of the gallery" in a variety show. The Illinois State Dental Society is supposed to have a committee on publication, whose sole duty it is to look after and see to it that all the matter which goes to make up the pages of the transactions be edited in accordance with the body from which it eminates. It is discreditable, to say the least, upon the part of the committee, to permit the scientific matter which is abundantly distributed through the work to be so grossly disfigured by such errors as have already been referred to, and others which may be found in the orthography, grammar, punctuation and construction of some of the papers. Dr. Johnston's, for instance, is conspicuous for the numerous paragraphs contained therein, and which could have been reduced with propriety, thus materially enhancing its appearance; however, had this been done, singular as it may seem, the book would have fallen short of reading matter about two pages, as compared with the issue of 1887.

A glance through the minutes of the transactions reveals one or two important steps taken by the society, one of which looks towards a better preparation of students for entrance upon the practice of dentistry, by increasing the pupilage from two to three years, including attendance upon two full courses of college instruction in separate years. The other step taken, is for the better improvement of our State dental law, which, as it now stands, is deficient in many respects.

The President, in his annual address, appeals with emphasis to the profession for some suitable method of desseminating knowledge among the masses relative to the care and preservation of the dental organs. Noticeable activity is being manifested in this direction by eminent members of the profession, and no doubt this vexed problem will be solved in a manner satisfactory to all concerned.

The report of the committee on "Dental Science and Literature" fell short of completeness; nevertheless, portions of the report deserves commendation, and especially that part which refers to the treatment of pulpless teeth. A very animated discussion follows this report which is full of interest, and no doubt will be the means of "waking up" future committees to a realizing sense of their duty.

The report of the committee on "Dental Art and Inventions," is anything but complete, from the fact that it fails to point out minutely the good, bad and indifferent qualities to be found in the long list of appliances presented. A full and complete report in this direction would be of inestimable value to the members of the society, in enabling them to select the best, without having to spend a small fortune on useless contrivances.

Dr. Patrick's paper on "Dental Morphology and the Etiology of Irregularities" is interesting and very instructive. The article is handsomely illustrated with four wood cuts.

Dr. Ottofy's paper on "Operative Dentistry" is interesting and to the point; nothing new is advanced, but time-tried practice is adhered to strictly, with the admonition interspersed here and there "try to do better."

Dr. Ames' paper on "Amalgams" bears evidence of careful preparation. He has devoted considerable time to experimenting with various amalgams, and the results of these experiments so far indicate that copper amalgam will yield the best results in saving teeth. The evaporation of mercury from amalgam fillings is denounced in strong terms as a delusion.

The report from the "Supervisor of Clinics is the poorest report offered to the society; but little, if any, benefit is to be derived from such a report, and it ought to have been stricken from the proceedings. A standing resolution was adopted, setting forth that his report shall contain as thorough a criticism of each operation as possible, setting forth all the steps he may have deemed incorrect or unwise, a statement of what he would consider a better method, and his reasons therefor—to the end that profitable and instructive discussion may follow. A glance at the report shows very conclusively that the purport of the resolution has not been complied with. A report can be given that will be productive of much good. Let us have it by all means.

A paper on "Making and Tempering Dental Instruments," by Dr. J. Frank Marriner, is perhaps the most useful and practical production found in the book; the discussion which follows contains many useful hints, and should be carefully read by every one.

In conclusion it will be well to state that the reviewer has purposely omitted some portions of the work, for want of space, and, therefore, will close by saying that as next year is the twenty-fifth anniversary we want to see a volume come from the hands of the publication committee that will be in keeping with the occasion.

BOOKS RECEIVED.

L' ENSEIGNEMENT ET L' ORGANIZATION DE L' ART DENTAIRE AUX ETATS-UNIS. RAPPORT ADDRESSE A' MONSIEUR LE MINISTRE DE L' INSTRUCTION PUBLIQUE par le Dr. Kuhn. Paris: Octave Doin Editeur, 8 Place de l'Odeon, 1888.

This volume of 299 pages contains a brief history of dentistry, a history of the dental college system of the United States. The nature of the preliminary education required of students who wish to enter the colleges is explained as well as the requirements for graduation, the college fees, etc. A portion of the work is devoted to the publication of the dental laws in force in many of the States, lists of dental societies, the history of their organization, etc. Finally, the condition of dentistry in other countries is treated in comparison with the condition of the profession in the United States.

L' ART DENTAIRE AUX ETATS-UNIS. RAPPORT A' L'ASSOCIATION GENERALE DE DENTISTES DE FRANCE, ETC., par M. Paul Dubois. Paris: Berthier, 104 Boulevard Saint-Germain, 1888.

PEARSON'S DENTISTS' APPOINTMENT BOOK, FOR THE VEST-POCKET FOR 1889. Published by R. I. Pearson and Co., Kansas City Dental Depot, Kansas City, Mo.

ADDRESSES AND PROCEEDINGS OF THE NATIONAL EDUCATIONAL ASSOCIATION, San Francisco, Cal., 1888. Published by the Association.

PAMPHLETS RECEIVED.

TRANSACTIONS OF THE INDIANA STATE DENTAL ASSOCIATION, Thirtieth annual meeting held at Terre Haute, Indiana, June, 1888.

Published by the Association—90 pages—to which is subjoined a list of practicing, licensed and registered dentists.

ANOTHER PROFESSIONAL HOLIDAY, being a series of papers contributed to THE DENTAL RECORD, by Geo. Cunningham, B. A., (Cantab.) D. M. D. (H.) L. D. S., (Eng.) London; the Dental Manfg. Co., 1888.

A STATISTICAL ENQUIRY AS TO THE RESULTS OF THE IMMEDIATE TREATMENT OF PULPLESS AND ABSCESSED TEETH. Reprinted from the Transactions of the Odontological Society of Great Britain, June, 1888. By the same author.

PRACTICAL SUGGESTIONS ON PERSONAL CARE OF THE TEETH. By Arthur Holbrook, D. D. S., Milwaukee, Wisconsin, 1889.

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REGULATING A PULPLESS TOOTH.

To the Editor of the Dental Review:

DEAR SIR: I have a lady patient twenty years of age in good health, whose teeth I am regulating. She came without appointment from a town, distant about fifteen miles, and I hastily took an impression and made a plate to be adjusted at her next visit. My first thought was that the central incisors would not need moving, but now find it desirable to bring them in somewhat and to slightly rotate them. I find that one is dead and that it had been filled with gold, and think the root unfilled. Pulp probably died after filling. I would like your opinion as to the probability of ultimate success with a patient of this age, and particularly in regard to moving the dead tooth. I would like an early answer, if possible, as I will see the patient again soon. If possible, write me.

This is the first time I ever thought of regulating a dead tooth. Is it practicable?

Yours truly, D.

To the Editor of the Dental Review:

SIR—What are the causes of the continuation of the taste of idoform in those cases where this drug has been used for either treating abcesses, or where it is incorporated in the root filling?

Yours truly,

JANUARY 3, 1889. N. L.

PRACTICAL NOTES.

SYPHILITIC NECROSIS OF THE MAXILLARY BONES.

REPORT OF A CASE BY L. L. DAVIS, D. D. S., CHICAGO, ILL.

A few months ago my attention was called to a case that presented some interesting features. The patient, A. F., Æ. 39, male, was referred to me by his physician for opinion regarding an abnormal condition of the right superior and inferior maxillæ. An examination of the mouth gave evidence, by the condition of the soft parts, of systemic derangement. The gums were swollen and spongy, an exudate of purulent matter surrounding each tooth, all the teeth more or less loose, but free from caries. Lower left first molar absent; also the right upper first and second, and the lower second and third molars. On the upper right side, at the point where the teeth had been removed, a small hard mass projected from the middle of an ulcer, surrounded by abundant purulent secretions, and the lower jaw presented a similar appearance, only much more unsightly in character. A further examination showed the hard masses to be detached from the maxillæ.

The patient stated that the tooth on the left side had been extracted fourteen years ago in Germany, and a few years later in this country he had extracted one of the upper molars on the right side. A year or more previous to seeing me he had suffered considerable pain on the right side, and had extracted the lower second molar, which was extremely loose, and a few weeks later the other upper molar on the same side. In August he had extracted the third molar on the left side, and had since noticed a rough projection at the points where the last teeth had been removed. The teeth extracted, he stated, showed no signs of caries, and while the upper teeth required considerable force to remove them, the lower ones came out very easily.

This history precluded the possibility of fracture of the process by the dentists who had extracted the teeth, and the absence of caries showed some other disease to be concerned in the trouble. As the gentleman seemed very excited and nervous, further questioning was deferred, and he was dismissed. From his physician the following was gleaned:

The patient had contracted syphilis while in the German army, had undergone very rigorous treatment, and had seemed to have recovered. His health had been good until about a year previous,and that five months ago the physician had been called to attend him for mental and physical debility. At first he seemed to have hysterical convulsions, but of late had showed signs of improvement. Although not suffering any pain, he had developed a hypochondriacal tendency, kept very close watch on his health, magnifying every little ailment. At present the physician was prescribing the iodides, but did not dare tell the patient his exact condition for fear of the result to his mental faculties, as he considered himself cured of the specific disease.

The diagnosis was now perfectly clear and the method of procedure clearly outlined, viz., the removal of all the necrosed bone, and a continuation of the systemic treatment.

The operation on the lower jaw was performed, first removing the remaining molar with the aid of hypodermic injections of cocaine, the patient sitting in an upright position in the dental chair. An incision was made from the point of exposure of bone to the angle of the ramus, and forward to the second bicuspid, then by the use of a long flat-blade burnisher the attachment of the soft parts was torn back and the piece of necrosed bone removed. It was found to include both outer and inner alveolar plates from a point a little posterior to second bicuspid, to the angle of ramus, and measured one and one-half inches. The portion of necrosed bone in the upper maxilla was about the size of a large hazel nut, and included a portion of the floor of the antrum. The patient suffered very little pain, and within two weeks the lower jaw was in a healthy condition. The opening into the antrum is slowly closing, and I anticipate no trouble in that direction.

A CASE IN PRACTICE.

BY I. P. WILSON, D.D.S , BURLINGTON, IOWA.

Mr. R., aged 22 years, visited my office some time since in an emaciated condition, and informed me that a few months before he had suffered from an extensive swelling of the neck and fauces, which came near costing him his life. For two or three days his jaws were clinched, deglutition was obstructed, and suffocation seemed to be inevitable. At length the crisis came, when a large quantity of pus was suddenly discharged into the pharynx, when the sufferer, it seemed, must die from strangulation. After a desperate struggle for life, his breathing became less difficult, and in due time his stiffened jaws relaxed, the swelling subsided, and he was soon able to partake of liquid food.

But two or three months had now passed, and yet he had not regained his usual appetite and strength. He had been constantly annoyed by a hawking sensation, expectorating at times a yellowish white liquid of a nauseating character.

As to the cause of his affliction there seemed to be considerable speculation, and quite a diversity of opinion. Some believed his condition to be of a strumous character, while others thought it a case of quinsy, while *one* suggested that his *teeth* might possibly be the cause of the difficulty. The young man acting on the last suggestion visited me for consultation. Discovering that one of the third inferior molars had been filled, and upon inquiry finding that the pulp had been "capped," I at once suspected mischief from that source. The young man informed me that the tooth had ached for a few days after it had been filled, but had never given any particular trouble afterward. It was, however, slightly sore and elongated at the time the pain and swelling first appeared.

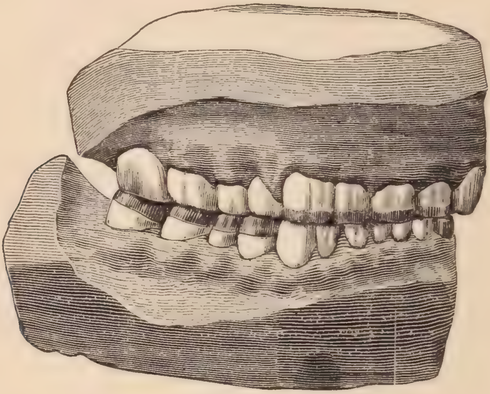
On introducing a reflector, so as to throw light upon the walls of the pharnyx, I discovered a little wart-like, fistulous opening on a line with, and posterior to the thyroid cartilage. This proved to be the outlet of a drainage tube or canal leading from the roots of the third molar to the pharyngeal cavity.

His teeth being crowded, and his molar having no antagonist, I determined upon extracting it, which resulted in a speedy cure of his throat trouble, and an improvement of his general health. It will be remembered that although the lower third molars are more firmly surrounded by solid bone than any of the other teeth, there is one point on the inner side of the jaw opposite the ends of the roots of these teeth where the bone is exceedingly thin, and in some instances we find the thin plate on the underside of the Mylo-hyoid ridge entirely missing. When an abscess forms at the apex of these roots, there is but little resistance, and the pus readily finds its way through at this weak point, and forces itself upon the surrounding soft tissues. If it comes in contact with the anterior border of the Internal pterygoid muscle, as it usually does in such cases, it will gravitate down its fibres to the place of its insertion on the inner side of the angle of the jaw where it will find an outlet upon the face. But the case under consideration was an exception to that rule. The pus was evidently conducted by the fibrous layers of the superior constrictor, the Mylo-hyoid, or some of the numerous muscles in that locality to the cavity of the pharynx, and we have the result above described. Fortunately, however, the thin plate of bone referred to above is usually of sufficient strength to resist the pressure of a developing abscess, and the pus is driven, not through the wall of the alveolus, but between it and the root, finding egress at the neck of the tooth.

A CASE OF CONTOURING IN A COUNTRY PRACTICE.

BY J. C. WALTON, D. D. S., HOWELL, MICH.

The patient was a farmer, forty years of age, of muscular physique and robust health. The third molars had never made their appearance. The superior left lateral incisor had been extracted in his youth. The other incisors and right cuspid were becoming worn off short; also the lower molars and bicuspids. The teeth were all worn, but the abrasion seemed to have affected chiefly the lower molars and upper incisors. Little plugs of reparative dentine filled the pulp chambers of several, looking like cylinders of amber. Several amalgam fillings bore record of the fact that the patient was conscious he possessed teeth, that they were useful organs, and that an effort had been made to prevent their early loss. These are welcome signs to an ambitious country practitioner. Each lower molar had an approximal cavity which was carefully prepared to act as an anchorage, and grooves and pits were made as additional anchorage to secure the prospective gold building. There being no decay in the bicuspids, cuspid and incisors, it was necessary to make the anchorages. In these teeth grooves were cut in the dentine varying in depth from one-sixteenth to three-eighteenths of an inch. The molar cavities were begun with mats of gold—non-cohesive—but fully three-fourths of the cavity was filled with reliable cohesive foil, No. 60. To this was welded gold and platinum foil, No. 60, shade 2, the remainder of the anchorage filled, and the building completed with same. The anchorage in the bicuspids, cuspid and incisors was each in turn filled with the gold and platinum foil, and each building com-



pleted at a sitting. Gold and platinum makes a hard and wearable surface. The case, after six years' use, now promises to be satisfactory for many years to come. The cut does not flatter the work.

Dr. O. Bujwid, of Warsaw, prepares a permanent corrosive sublimate solution in the following manner: Dissolve five grains of bichloride of mercury in ten grains of hydro-chloric acid under the influence of heat; dilute with five liters of water. The sulphates and carbonates which will be present in the solution are neutralized by the water, and have no potency.

To prepare cores for undercuts of models, when making dies, a good method consists in thoroughly mixing common flour in the proportion of about ten per cent to ninety per cent of molding sand; or, what is better, marble dust. This is first mixed dry, and then, on being moistened with water somewhat more freely than the sand alone is moistened, placed into the undercuts, and while the model is being prepared the paste has sufficiently hardened to be gently removed and placed in an oven, or otherwise exposed to gentle heat. When these cores are dry they can be safely handled, and on withdrawing the model they can be readily replaced in their position.

Cocaine cotton is prepared in the following manner: Saturate fifty grains of absorbent cotton in fifty grains of a three per cent solution of hydro-chlorate of cocaine. The cotton should be dried in warm air, and is ready for use. It is said to be useful in allaying some neuralgic pains which originate from toothache. But it is of especial value in children. Place a pellet of it into the ear of the affected side.

Dr. St. G. Elliott recommends that two of the circular asbestos soldering blocks, which are one inch thick and hollowed out, be placed together, when an excellent annealing oven for steel or gold work will be formed.

MEMORANDA.

Dr. W. F. Lewis, lately of Milwaukee, has located in California.

Drs. M. H. Patten and K. B. Davis, of Springfield, were in Chicago in December.

The Arkansas State Dental Society will meet at Hot Springs Wednesday, Jan. 16, 1889.

Dr. Kester says, thin strips of rubber-dam are useful in forcing rubber between the teeth in place of floss silk.

Veterinary dentist, and horse dentist is seen on nearly *all* signs now swinging in Chicago—veterinary signs we mean.

Dr. Geo. W. Whitefield, of Evanston, now fills the chair of Electro-Therapeutics in the University Dental College, Chicago.

"Pgorhea" alveolaris is what the *Southern Dental Journal* calls it. The proof-reader *must* have been—well—we extend our sympathy!

Dr. A. Morsman, of Omaha, will take the post of associate editor on the *Western Dental Journal* just vacated by Dr. A. H. Thompson.

A correspondent asks us to advocate the resumption of the manufacture of Morgan's plastic gold. We believe any dealer can supply it.

The Dental Office and Laboratory hereafter will be issued every two months instead of quarterly as heretofore. Dr. Chaplin remains the editor.

We are under obligations to Dr. G. W. Dennis, of LaSalle, Illinois, for several anomalies of pulp-calcification, three rooted lower molars and two rooted cuspids.

The *St. Louis Medical Journal* had its December issue, with plates, cuts, etc., burned in the fire which destroyed the Nixon-Jones printing house December 17.

The back of a spoon-shaped excavator makes an excellent spatula for gently pressing cement fillings into hidden portions of a cavity, or in spreading cement cappings over nearly exposed pulps.

Dr. W. J. Martin and Mrs. Martin have gone to California for a three-months' trip. Dr. Martin has been one of the hard workers in Chicago for fifteen years and feels the need of some relaxation.

Dr. Warren De Crow, formerly of Quincy, Illinois, is the new President of the California State Dental Society. As has been remarked before, "The Illinois, like the Ohio man," ultimately "Gets there."

The "Doctor" Duflot, who has been exploiting the New Zealanders, formerly rode in his "golden chariot" through the streets of Chicago until the State Board of Health required him to fold his tent and "silently steal away."

The attention of our readers is called to "Practical Notes" begun in this number of the Review. Correspondents will favor us by sending clippings or short clinical histories of cases in practice. The department will be continued if we receive the support of our readers.

Dr. Ad. Witzel has introduced through George Poulson of Hamburg some very convenient cotton rolls to be used instead of napkins in damming back saliva. They are cylinder-shaped wads of cotton, wrapped in ribbed, absorbent paper, varying in size from 1½x¾ inch to 1x½ inch.

Dr. Gallippe, of Paris, is said to have noticed a passive discoloration of the teeth of persons to whom antipyrine has been internally administered. This is especially observed on teeth whose enamel is abraded. By rubbing the teeth with per-oxide of hydrogen the discoloration may be removed.

Dr. W. B. Ames has recently made a tour of the eastern cities, visiting the dental schools in each city. His observations will, no doubt, be appreciated by the students of the Dental College. We think it would be a good plan for more of the professors of colleges to make an annual inspection of one or more colleges outside of their own city.

An uncommon case came under our observation quite recently. We extracted a lower temporary central incisor for an infant four days old. It was born with that one tooth, which materially interfered with suckling. Ten days after the central incisor on the opposite side appeared and was extracted for the same reason.

Since the establishment of the DENTAL REVIEW, Nov. 15, 1886, 51,400 copies have been printed, 48,792 of which have been circulated. Two hundred and eight complete files are retained for future subscribers who may desire to possess a complete series. These will soon be exhausted, as the subscription will be largely augmented during the coming year. Advertisers should make a note of this.

Twice, recently, we have seen a pulpless lateral and central incisor, with an alveolar abscess discharging through the same fistulous opening. In one of the cases the lateral had every appearance of being vital, *but* on testing, it was found to be lifeless. The electric mouth-lamp or good sunlight reflected through the tooth by means of a mouth-mirror will usually detect a dullness in the transparency of such teeth to warrant drilling into them.

A short time ago we drilled into a superior first bicuspid tooth—supposed to be pulpless—and found the labial root with pulp dead and the palatal portion alive. There was an abscess with a fistulous opening from the labial root. The bulbous portion of the pulp was dead and a foul smell issued from the opening made in the crown of the tooth. A gold filling impinged on the labial cornua of the pulp. It had been in this condition for some years. Dr. L. L. Davis has observed a similar case.

A society is being organized by the dental students of Paris, similar to those already in existence in the United States. The students' societies in England differ from those now in existence in other countries, in that they are called, "Past and present students' society of the National Dental Hospital," etc., always naming the institution and allowing an ex-student to continue his membership. Many papers read before the students' societies in Great Britian, are published in the journals of London.

An itinerant dentist not far distant from Chicago, being accosted one day as to his method of treating acute pericementitis, replied that it was not his custom to divulge secrets which had required years to acquire, but as the interrogator had been so liberal in describing the best method of treating pulpless teeth and filling root-canals, he would not hesitate to tell him how he treated a "sore tooth." "I use," said he, "Kendall's Spavin Cure," and if that fails, "pull" out the tooth. Score one more for dental Materia Medica.

Appreciation of Chicago journalism by *The Western Dental Journal.*—The index in the December issue of *The Western Dental Journal* gives credit for original articles reprinted during the past year to: THE DENTAL REVIEW, ten papers; *British Journal of Dental Science*, five papers; *Dental Cosmos*, five papers; *Dental Record* (London), four papers; *Dental Register*, four papers; *Southern Dental Journal*, three papers; *Independent Practitioner*, two papers; *Ohio Journal of Dental Science*, two papers: *Archives of Dentistry*, one paper.

The Queen of Sweden's mental condition is said to be in such a state as to necessitate her complete seclusion and the absence of all intercourse with either her family or court. Indeed, according to latest accounts, her medical attendants, with a view to produce a reaction both of a mental and physical nature, have insisted on her performing with her own royal hands all kinds of menial and household work, such as scrubbing the grates, sweeping the floors, and other similar duties demanding considerable bodily exertion. The remaining members of her family have all what is known in dentistry by the name of "barred teeth," which not only causes them intolerable suffering, but renders their jaws perfect mines of wealth to such men as Dr. Evans, at Paris, and other famous dentists.—*Exchange*.

MALLETS.

Drs. E. D. Swain, J. W. Wassall, E. Noyes, and Garrett Newkirk, use steel mallets weighing about two and one-half ounces; Drs. G. V. Black, T. W. Brophy, P. J. Kester and A. W. Harlan prefer lead mallets weighing about four and one-half to five and a half ounces; Dr. Geo. H. Cushing uses a wooden mallet one ounce, or one of lead four and a half to five and one-half ounces; Dr. F. H. Gardiner uses an automatic mallet; Dr. Black's mallet is really made of brass with tinners' solder on each end; Dr. W. B. Ames uses the electric mallet, a steel and also a lead mallet; Dr. J. G. Reid uses a lead mallet, Dr. G. S. Salomon uses the electric mallet almost exclusively.

LIST OF DENTISTS WHO HAVE BEEN LICENSED TO PRACTICE IN ILLINOIS SINCE JULY 16TH UP TO JANUARY 1ST, 1889.

	No. of License.	Location.	Diploma from College.	Class of.
Boulter, H. H., M. D.	300	Chicago.	State Board Examiners.	
Campbell, Jesse M.	298	Morris.	National University.	1888
Cady, Frank W.	309	Earlville.	Chicago Col., Dent. Surg.	1888
De Camp, A. L.	294	Chicago.	State Board Examiners.	
Dodge, Frank A.	302	Chicago.	Chicago Col., Dent. Surg.	1887
Drake, Homer A.	308	Chicago.	University of Michigan.	1885
Fischer, V.	292	Chicago.	State Board Examiners.	1888
Gilbert, G. N.	295	Pana.	State Board Examiners.	
Hanson, D. T.	297	Lexington.	Ohio Col., Dent. Surg.	1888
Hill, Chas. L.	299	Chicago.	Penn. Col., Dent. Surg.	1887
Lauer, L. A.	293	Chicago.	State Board Examiners.	
Merhoff, Chas. E.	286	Chicago.	University of Mich.	1888
Munroe, Graften,	291	Springfield.	University of Penn.	1885
Nordahl, Hans Theo.	305	Chicago.	Chicago Col., Dent. Surg.	1888
Rice, F. L.	287	Vandalia.	Ohio Col. Dent. Surg.	1887
Richardson, F. T.	296	Albion.	State Board Examiners.	
Smith, Albert	288	Franklin Grove.	University of Michigan.	1883
Shannon, Geo. H.	289	Marshall.	University of Penn.	1888
Stahle, O. H.	303	Joliet.	Chicago Col., Dent. Surg.	1886
Treen, R. De G.	290	Chicago.	Chicago Col., Dent. Surg.	1888
Tate, Wm. E.	306	Chicago.	Ohio Col., Dent. Surg.	1869
Whedon, S. A	301	Elgin.	Chicago Col., Dent. Surg.	1887
Woelz, Chas. F.	304	Quincy.	Indiana Dental College.	1887
Washkuhn, Julius.	307	Chicago.	Chicago Col. Dent. Surg.	1887

TEMPORARY LICENSES IN FORCE.

Louise Moeller, Chicago, issued by Dr. C. S. Smith.
John A. Whipple, Chicago, issued by Dr. C. S. Smith.
Frank E. Seelye, Chicago, issued by Dr. C. S. Smith.
Chas. A. Clarke, Chicago, issued by Dr. C. R. E. Koch.

At the Union Dental Meeting held at Boston, Massachusetts, July 10, 11, 12 and 13, 1888, the following Preamble and Resolutions were unanimously adopted by a *rising vote:*

WHEREAS, Certain manufacturers and dealers in dental instruments and materials have formed a combination known to the profession as the Dental Trade Association; and,

WHEREAS, The forming of any such combination can only be an obstacle, retarding progress in the direction of scientific investigation, improvement and higher professional attainment; therefore,

Resolved, That we consider the forming of such combinations to be a reflection on the scientific and professional character of our profession.

Resolved, That we invite all members of said combination to withdraw from the same, and we pledge them our hearty interest and support.

Voted unanimously,

That a copy of the above resolutions be sent to every Dental Journal printed in the English language, and their publication requested.

One of our most esteemed correspondents writes as follows about the lack of interest in scientific work by the every-day dentist. It will well repay pondering upon:

DEAR SIR: I have received the annual invitation to renew my subscription for the REVIEW. Accompanying the circular is another announcement that Dr. Black's work is ready. When at Freeport you told me that you believed that only three copies had been sold at that time. If that is a fact it is in no respect flattering to the dental profession as students. Here we have the greatest and only distinct work of the kind falling flat, from what appears to me to be the indifference of the profession regarding a knowledge of those tissues which it is within their province to treat, and it is a burning shame. The investigator has, under such circumstances, but little to encourage him in an effort to educate, and he naturally feels like drawing his head into his shell and remaining there.

The same indifference is shown in our societies. The rank and file seem to have but little disposition to rise above the level of the amalgam mixer. When that subject is brought to the front, the average dentist's brain seems equal to the task of demonstrating the uses and methods of using the precious stuff, while at the same time he is willing to show his "professional" skill as a rubber packer.

Papers read at the meetings of our State Societies on the subject of the management of pulpless teeth show to a certainty that the writers have been enabled to capture an enormous volume of ignorance, regarding the peridental membrane and pulp, from either a normal or pathological standpoint. The time has been when dental literature upon the subject of pathology, or even normal minute anatomy, was quite meagre, but there is at the present time no excuse for ignorance on the part of the dentist, and when he reads a paper before a body of supposedly scientific men and advances ideas which were exploded the year before, even he deserves scoring unmercifully. There is now no excuse for ignorance, for he who runs may read and be benefited if he will. If he will not, it is the *duty* of every member to teach him a lesson.

There is a possibility of the student making wrong deductions, even though he take advantage of all means offered for education. Such men should be very kindly dealt with and directed aright, but when a supposedly, fairly intelligent member of the profession reads a paper, with the result of showing an inexcusable ignorance, the present conditions are a bar to any patience with him.

Common "horse sense," combined with the close study of Dr. Black's work, would help such men amazingly.

Of course I must have the REVIEW. * * * * *

TO THE MEMBERS OF THE DENTAL PROFESSION.

GENTLEMEN—For the protection of our profession, and at the earnest solicitation of many of its prominent members, the undersigned undertook, after mature deliberation, the formation of "The Dental Protective Association of the United States." Its object at present is, in a lawful and equitable manner, to unite the strength of our profession to contest the patents of the International Tooth Crown Company, the validity of which has not been established.

Under competent legal advice we deemed it best to become incorporated. This has been accomplished under the name above set forth. The undersigned, having consented to act as the first Board of Directors, By-Laws have been adopted, a copy of which is herewith enclosed to you. The number of Directors has been fixed at three, as it must be obvious to all that the work of such an organization can only be successfully handled by a small number not widely separated, so that there can be concerted action without delay.

Please examine some of the considerations which have led to the formation of this organization :

First.—Dentists are writhing throughout the country under having to submit to a grasping monopoly because single-handed and alone they cannot afford the expense of contesting its unjust claims. Numbers are being annoyed and prosecuted for the infringement of patents whose validity has never been legally established, and there is every reason to believe never can be established if dentists are organized for defense.

Second.—Practitioners have not forgotten the treatment they received at the hands of the Goodyear Dental Vulcanite Company, and from the fact that the International Tooth Crown Company is largely managed by the same individuals they can infer the treatment they may expect if they are unfortunate enough to be left in its power.

Third.—If they do not defend themselves, but allow this company to prosecute its claims, they will have to pay a royalty on all for any banded or gold crown we have ever made or may make in the future.

DON'T FORGET ; that to yield to the company, or to contest its demands alone and unaided, will cost you hundreds of dollars ; that to protect yourself by joining the "Dental Protective Association" will probably cost you less than ten dollars.

DON'T FORGET ; that it will be impossible to reach every practitioner by circular, but notices will be sent to the Dental Journals, and such notices are meant for you individually.

DON'T FORGET ; that we want your name and membership fee of $10, and your hearty co-operation in securing your neighbors and friends as members of this organization ; that while the benefit of the organization will be shared by the many the work must in the main devolve upon a few. You can greatly aid the Directors by responding promptly, and by inducing other dentists to join the Association.

We want five thousand names.

DON'T FORGET; that name and address, *plainly written*, with membership fee, should be forwarded immediately to J. N. Crouse, Chairman of Board of Directors of the Dental Protective Association, 2231 Prairie avenue.

Receipts will be forwarded at once, and a copy of by-laws sent for you to sign, if you have not already done so.

Mr. Lyman J. Gage, Vice-President of the First National Bank of Chicago, Ill., has kindly consented to act as Treasurer for the Association.

Board of Directors.—J. N. Crouse, Truman W. Brophy, E. D. Swain.

LYMAN J. GAGE, *Treasurer.*

CHICAGO DENTAL SOCIETY.

The twenty-fifth anniversary of the Chicago Dental Society will be celebrated by a three days' meeting to be held in the ladies' ordinary of the Grand Pacific Hotel, corner Clark and Jackson streets, Chicago, Ill., February 5, 6 and 7, 1889.

The Grand Pacific Hotel will be the headquarters for guests, and will furnish rooms above the parlor floor with board at three dollars per day. All other rooms at fifty cents per day less than usual rates.

The committee have secured reduced railroad rates, viz: one and one-third fare on all roads included in the following associations: The Trunk Line Association, whose territory is east of Buffalo, Salamanca and Pittsburgh, extending through to Boston; Central Traffic Association, which includes all roads running west from Buffalo and Pittsburgh to Chicago; Southern Passenger Association, which includes all Southern roads leading to Chicago; The Western States' Passenger Association, which includes all roads running west from Chicago. It is not necessary to give the roads in detail as the above named associations include all roads leading to Chicago.

The committee wish to call *special* attention to the following item: Each delegate or member desiring the excursion rate must purchase a first-class ticket (either limited or unlimited) to the place of meeting, for which he will pay the regular fare; and upon request, the ticket agent will issue a printed certificate of purchase of the general form. These printed forms are kept by all ticket agents and will be filled out upon request of purchaser.

Be sure to get your receipt at point of starting.

An exhibit will be made by manufacturers and dealers of novelties in their various lines.

The meetings will be exclusively devoted to the reading of papers and the discussion of professional subjects and no other business will be transacted.

All speakers excepting those selected to open the discussion will be limited to ten minutes.

No speaker can be allowed the floor more than twice during the discussion of a paper.

A most cordial invitation is extended to all members of the profession to be present at this meeting, which promises to be one of great interest.

PROGRAMME.

TUESDAY MORNING, FEB. 5, 1889.—The meeting will be called to order promptly at 10 o'clock.

Prayer, Rev. G. C. Lorimer, D.D., Chicago.

Paper, "Gum-colored Porcelain Fillings," A. H. Thompson, Topeka, Kan.

Discussion.

Paper, "A Study of the Effects of Cocaine upon Man and some of the Lower Animals," C. P. Pruyn, Chicago, Ill.

Discussion.

Paper, "Obtundents of Sensitive Dentine," T. E. Weeks, Minneapolis, Minn.

Discussion.

TUESDAY EVENING, 7:30 o'clock.

Paper—"The Study of Pre-historic Remains in their Relation to Dentistry." J. J. R. Patrick, Belleville, Illinois.

Discussion.

Paper—"Caries and Necrosis in their Relation to Practical Dentistry." J. H. Martindale, Minneapolis, Minn.

Discussion.

WEDNESDAY MORNING, 9 o'clock.

Clinics at the Chicago College of Dental Surgery.

WEDNESDAY AFTERNOON, 3 o'clock.

Paper—"Antiseptics," G. V. Black, Chicago, Illinois.

Discussion.

WEDNESDAY EVENING, 7:30 o'clock.

Lantern Illustrations.

Paper—"With the Development of the Teeth, the Formation of Dentine and its Appearance in Health and Decay."

The paper will be illustrated by photo-micrographs, projected on the screen by means of the oxy-hydrogen lantern. Many of the photographs were made for this demonstration; others are from Dr. W. D. Miller's beautiful sections of Natural and Artificial Decay,

R. R. Andrews, Cambridge, Mass.

Discussion.

Paper—"Artistic Methods in Prosthetic Dentistry," illustrated by large cartoons, L. W. Comstock, Indianapolis, Ind.

Discussion.

Clinics will be held on Wednesday and Thursday mornings, at the Chicago College of Dental Surgery, North-east corner Wabash Avenue and Madison Street. They will begin promptly at 9 o'clock.

WEDNESDAY, FEB. 6.—J. B. Vernon, St. Louis, Mo., Bridge Work.

C. Thomas, Des Moines, Iowa, Porcelain Fillings.

Francis Peabody, Louisville, Ky., Filling Root Canals with Lead Points.

C. S. Case, Jackson, Mich., will demonstrate his method of making Artificial Vela and Obturators for Cleft Palate, provided a subject can be secured.

A. H. Thompson, Topeka, Kansas, Gum-Colored Porcelain Fillings.

E. T. Darby, Philadelphia, Pa., Filling with Crystal Gold, and the use of Matrices.

A. W. Hoyt, Chicago, Ill., Porcelain Filling secured by Gold Filling.

S. G. Perry, New York City, will demonstrate the application of Perry's Separators, and the Weber-Perry Engine and Mallet.

T. E. Weeks, Minneapolis, Minn., Setting of Logan Crown with Gold Attachment, showing Original Method of Investment for Soldering.

D. F. McGraw, Mankato, Minn, Obtunding of Sensitive Dentine, and Controlling of Peri-Dental Inflammation by Electrolysis.

J. W. Wick, St. Louis, Mo., his method of Gold Filling.

Louis Ottofy, Chicago, Ill., Implantation.

THURSDAY, FEBRUARY 7.

T. L. Gilmer, Quincy, Illinois, Gold Crown Telescoped Over a Platinum band; also a Combination Crown of Platinum and Weston's metal.

E. H. Allen, Freeport, Illinois, Gold Filling, using Electric mallet.

C. N. Johnson, Chicago, Illinois, Gold Filling.

C. W. Lewis, Chicago, Illinois, Herbst Method.

J. G. Reid, Chicago, Illinois, Copper Amalgam.

M. E. Smith, Chicago, Illinois, Gold Filling, using Snow & Lewis plugger.

E. M. S. Fernandez, Chicago, Illinois, Demonstrating his Method of Filling with the Oxy-phosphates and Oxy-chlorides.

W. H. Taggart, Freeport, Ill, will show a new Root Trimmer and a new Suspension Engine.

J. W. Wassall, Chicago Ill., will demonstrate Root Filling with Chloro-Percha and Gold Points; also, the use of McKellops' Platinum Gold Broaches.

E. A. Royce, Chicago, Ill., Gold Filling, using Abbey's Non-Cohesive Gold in Cylinders.

T. S. Waters, Baltimore. Md., Removable Bridge.

R. B. Winder, Baltimore, Md., Movable Bridge; also a new Rubber Dam Clamp combined with a Check Holder; also a separator.

Henry A. Parr, New York City, Removable Bridge.

J. A. Woodward, Philadelphia, Pa., Reflector for Lighting the Mouth.

J. N. Farrar, New York City, is expected to be here and will exhibit his Regulating Appliances."

J. N. CROUSE,
GEO. H. CUSHING,
E. NOYES,
Executive Committee.

BY-LAWS OF THE DENTAL PROTECTIVE ASSOCIATION OF THE UNITED STATES.

OFFICERS: HOW ELECTED.

SECTION I. The Officers of the Association shall consist of a President, Vice-President, Treasurer, Secretary and Board of Directors, who shall hold their respective offices for one year, and until their successors are elected and qualified: PROVIDED, that any officer may be removed by the Board of Directors whenever the interests of the Association shall require, and the Board of Directors shall be the sole judges of the interests of the Association: AND PROVIDED FURTHER, that the office of Vice-President and Secretary may, at the discretion of the Board, be held by one and the same person.

ANNUAL ELECTION.

SECTION II. The annual meeting of the members shall be held in Chicago, on the Third Monday of December of each year. A notice designating the place of such meeting shall be signed by the President and Secretary, and published in a public newspaper in Chicago, and in such of the Dental Journals as the Board of Directors shall select, and the Secretary shall also mail a written or printed notice to each member at least ten days before said day.

SECTION III. A Board of Directors, who must be members of the Association, shall be elected annually at the annual meeting of members, by the members to serve for one year, and until their successors shall have been elected.

SECTION IV. The Board of Directors shall consist of three members of the Association, to be selected and chosen by a majority vote of all the members of the Association. Every member shall have the right to vote at the regular annual meetings for three Directors, either personally or by proxy, and in case of the member not appearing personally at the regular Annual Meeting to vote and no one being designated as proxy for him, the President, and in his absence the Vice-President, shall be authorized to vote as proxy for such member.

MEETING OF DIRECTORS.

SECTION V. Immediately after the annual election of Directors, the Board of Directors elected, shall meet and select a President, Vice-President, Secretary and Treasurer, of whom the President, Vice-President and Secretary shall be members of the Board of Directors.

SPECIAL MEETINGS OF THE ASSOCIATION.

SECTION VI. The President and Board of Directors may call special meetings of the members of the Association, which shall be held at its general office at such time as shall be designated in the call; and, in such case, it shall be the duty of the Secretary of the Association, at least ten days before the time fixed for holding such meeting, to mail to each member entitled to vote, whose address is known to the Secretary, a notice specifying the time and place of holding said meeting, and briefly stating the object of the meeting, if the same has been mentioned in the call; and the Secretary shall also cause to be published in a public newspaper in Chicago, and in such of the dental journals as the Board of Directors may name, at least ten days prior to the time of holding the meeting, a notice of like effect.

REGULAR MEETING OF THE BOARD OF DIRECTORS.

SECTION VII. The Board of Directors of this Association shall hold their regular meeting at its general office in Chicago on the fourth Monday of each month at the hour of 4 o'clock, P. M. A majority of the Board shall constitute a quorum for the transaction of all business; and in case there be no quorum present on the day fixed for their regular meeting, the member or members present may adjourn the meeting from time to time until a quorum be obtained, or may adjourn said meeting *sine die*.

SPECIAL MEETINGS OF THE BOARD OF DIRECTORS.

SECTION VIII. The President of the Board of Directors shall have the power to call special meetings of the Board, whenever he deems it expedient so to do; and it shall be his duty to call special meetings of the Board at the request of one Director of the Association; in either instance a notice of time and place of meeting shall be served or mailed to each Director, giving at least one day's notice thereof, exclusive of the day on which said notice is mailed.

DUTIES OF PRESIDENT AND VICE-PRESIDENT.

SECTION IX. The President, and in his absence the Vice-President, shall preside over all meetings of the Association and over all meetings of the Board of Directors at which he may be present, to preserve order and regulate discussion according to parliamentary usage.

The Vice-President shall, in the absence of the President, perform all the duties of the President. (In case of absence of the President and Vice-President from any meeting of the Association, a President *pro tem.* may be chosen to preside.)

DUTIES OF SECRETARY.

SECTION X. The Secretary should attend all meetings of the Association and Board of Directors, whether regular or special; he shall keep in a book prepared for that purpose, a true record of all the proceedings of such meetings. He shall have the custody of the corporate seal and shall attach the same to all documents which require sealing.

DUTIES OF THE TREASURER.

SECTION XI. The Treasurer shall receive, have charge of and disburse, upon proper vouchers, the funds of the Association under the direction of the Board of Directors, and he may be removed at any time, by the Board of Directors, for any misconduct in the affairs of his office, and may be required to give bonds for such amount as the Board of Directors may designate, with one or more sureties to be approved by the Board of Directors.

DIRECTORS AND THEIR POWERS.

SECTION XII. The Board of Directors shall consist of three members, to whom the policy, conduct, property and affairs of the Association and its membership is hereby confided. The Board of Directors shall have power:

To accept or reject applications for membership in the Association ;

To fill any vacancy that may occur in any office ;

To levy and collect, if necessary, assessments which, in all, shall not exceed ten dollars per member.

To take entire charge of the defense of members of the Association in any of the States or Territories, when prosecuted for the infringement of patents the validity of which has not been fully established, and with the funds of the Association to retain and pay one or more counsel of their own selection and with the funds of the Association to pay and defray all necessary and proper expenses of any such litigation.

MEMBERSHIPS.

SECTION XIII. Subject to the approval of the Board of Directors, any member of the Dental profession may become a member of the Association on payment to the Treasurer of a membership fee of ten dollars, and subscribing to the By-Laws of the Association.

VACANCIES.

SECTION XIV. Whenever a vacancy shall occur in the Board of Directors, from any cause, it shall be filled for the remainder of the term by the Board of Directors.

BOARD OF DIRECTORS TO MAKE REPORT.

SECTION XV. At the regular annual meeting of the members for the election of Directors, the retiring Board shall make, through their officers, a full report of the condition of the Association, including a financial statement showing all assets and liabilities, and the amount of money received and disbursed during the year.

SECTION XVI. It is understood that all officers of the Association are amenable to the Board of Directors, supreme authority upon all points affecting the Association or its management being vested in said Board.

ALTERATION OR AMENDMENT OF BY-LAWS.

SECTION XVII. These By-Laws may be altered or amended at any regular meeting of the Board of Directors, by a vote of a majority of all the Directors; PROVIDED, that a copy of such proposed alteration or amendment shall have been submitted to the Board in writing, at least one week previous to the adoption thereof.

SECTION XVIII. Upon all questions of construction of By-Laws the decision of the Board of Directors shall control until overruled by a vote of the Association. Any By-Law may be suspended by two-thirds vote of any regular meeting of the Association.

SECTION XIX. The presence of ten members shall be necessary to constitute a quorum at any meeting of the Association; which number may be increased or diminished by any subsequent By-Law.

SECTION XX. At each stated meeting of the Association the order of business shall be as follows:—

1. Reading of minutes of preceding meeting.
2. Reports of officers.
3. Reports of committees.
4. Unfinished business.
5. New business.

To the Dental Protective Association of the United States:—

I hereby subscribe to the By-Laws of your Association and wish my name placed on the roll of members:

Name..

P. O. Address..

....

OBITUARY.

DIED: Jan. 8, 1889, DR. THOMAS BRIAN GUNNING, at No. 42 Stuyvesant Place, New Brighton, Staten Island, N. Y.; age, 76 years.

Dr. Gunning was born in London, England, but came to this country at an early age and began the study of dentistry in 1840 in the office of John Bundell, one of the most famous dental surgeons of that time. His experience in this office coupled with his natural inventive genius, soon placed him in a high position in the profession. In 1861 he introduced the hard-rubber interdental splints for the treatment of fractured jaws.

In April, 1865, Dr. Gunning was called to Washington, at the suggestion of Surgeon B. F. Bache, Director of the United States Laboratory, to attend William H. Seward, then Secretary of State, who had sustained a double fracture of the jaw, by being thrown from his carriage, the case being further complicated by the attempted assassination. Dr. Gunning enabled Mr. Seward to attend a Cabinet meeting the day after a splint was applied. Dr. Gunning was one of a commission to select the medical instruments to be sent to the Paris Exposition of 1867. In the Centennial Exposition of 1876 Dr. Gunning's exhibits explained his peculiar modes of treatment completely, showing what was required for every description of fractured jaw.

In 1867 he published a pamphlet on the "Physiological Action of the Muscles Concerned in the Movement of the Lower Jaw," in 1874 a pamphlet on "The Larynx, the Source of Vocal Sounds," and in 1878 on "Hard Rubber Appliances for Congenital Cleft Palate." He retired from practice three years ago. He leaves two sons and one daughter.

DIED: JORDAN W. LAMBERT, on Jan. 6, 1889, at St. Louis; age 36 years. Mr. Lambert was generally known by his connection with "Listerine."

THE

DENTAL REVIEW.

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PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

The twenty-fifth anniversary of this Society was celebrated by a three days' meeting devoted to the reading of papers and discussions on professional subjects. The sessions were held in the ladies' ordinary of the Grand Pacific Hotel, February 5, 6 and 7, 1889.

TUESDAY, FEB. 5—MORNING SESSION.

The Society was called to order by the President, Dr. J. A. Swasey, at 10 o'clock, after which the Rev. G. C. Lorimer, D. D., invoked divine blessing.

The President then made a short, neat, impromptu address of welcome.

Dr. A. H. Thompson, of Topeka, Kan., read a paper as follows:

GUM-COLORED PORCELAIN FILLINGS.

I feel that I should preface my paper by reminding you in advance that the entire art of porcelain filling is yet in its most crude state, notwithstanding the fact that it has been occasionally employed by a few operators for many years.

I wish also to say that the specimens shown are very crude, having been prepared hastily for mere illustration, and some of them are my earliest experiments.

The dried and whitened teeth are also unsatisfactory for illustrating the work, and you will need to moisten the settings with the finger in order to bring out the color.

The theory of porcelain settings or inlays, for filling cavities on the anterior, visible surfaces of the teeth, has been again revived and has attracted considerable attention. There is no doubt but that porcelain possesses the most favorable qualities for imitating the natural enamel in colors and texture, of any material with which we are acquainted. We constantly employ it in the imitation of the natural teeth with the greatest success and the most complete deception in restoring whole crowns, and it really seems that we should be able to use it with equal success in the restoration of parts of crowns. This is singularly difficult, however, although the difficulties that lie in the way of its extensive application are mainly those of manipulation, for it is very refractory as a filling material. The greatest difficulty to be overcome is to make a joint with the enamel that will not be easily noticed ; but this must be accomplished before we can employ the material successfully as an invisible filling.

Porcelain setting or inlay in human enamel is closely related to the arts known as inlaying and mosaic. Inlaying is the art of filling up incised designs with a material different from the base or matrix, whether metal, wood or stone, and then finishing off and polishing all together. Mosaic is the fitting together of many pieces of colored marble, enamel, glass, etc., to form a pattern and by grinding off the ends of the rods, a picture in imperishable colors is displayed. A combination of the two is called inlaid-mosaic. There is a variety of inlaid-mosaic in ivory which consists of jewels set in ivory, of which some very ancient examples have come down to us. Our porcelain dental inlay-work is most closely related to the ivory inlay-mosaic art, the technique of which we will need to study in order to accomplish the highest degree of skill in this peculiarly artistic work. Cloisonné work is made by leaving a partition or cloison of the basis material between the inlays, such as the old ivory cloisonné mosaics or the network metal pieces. In the latter, the porcelain or enamel is baked in the cells of metal in a pattern, and the whole polished off together, leaving the metal exposed in the lines of the design. Such an effect is produced by setting a piece of porcelain with gold in a tooth, as it is separated from the basis of the enamel by a cloison of gold.

At this time it is desired to call attention to but one branch of the porcelain inlay system which has been of peculiar satisfaction to the writer and to unfortunate persons requiring such operations. It is that of filling cavities on the exposed surfaces of the necks and roots of the anterior teeth above the enamel, in the region usually covered by the gum, by setting in inlays of red or gum-colored porcelain taken from porcelain gum teeth. Gold fillings on the necks and roots of teeth are very unsightly and offensive, and anything that will enable us to avoid such a misfortune to our sensitive patients will be a boon indeed. It is especially serious with ladies, some of whom by too vigorous cross brushing have caused the gums to recede over the necks of the anterior teeth, thereby leading to caries in that location. Of course the number of cases in which this art is applicable, are comparatively few—scarcely enough, in fact, to develope a passable skill. But with careful effort, the operation can be performed very nicely by the ordinary practitioner, and the pleasure of seeing the appearance of gum restored where an ugly carious spot or a gold filling existed before, is a reward for the tedious labor expended in its execution. It is the highest art to thus restore a lost part in a conspicuous place in such a manner that the restoration cannot be detected by ordinary observation.

The technique of this branch of the work as developed by the writer's limited practice, is very simple. A piece of porcelain gum from an artificial tooth is selected, that matches the natural gum in color and texture as closely as possible, there being some variety in the color of the gum in different persons. But, as the cement used in setting the piece is colored also, you can control the shade to a great extent by the amount of color employed. To color the cement, a very little dry Chinese vermilion, tinged with ultramarine blue, is first mixed with the oxide powder to make the cement blueish, for setting the piece, as the pink cement furnished us will not answer for this purpose.

The piece of porcelain gum selected is ground to proper thinness from the tooth-body side, making allowance for the projection of the piece from the cavity to some extent, in order to restore the fullness of the gum. The cavity must be cut as deeply as safety will permit and laterally to the gum margin, or under the gum if possible, in order to make a good joint. Large cavities running up on the root, unless quite narrow, will require two pieces to fill properly, which are fitted together at an angle in the center, like the comb of a roof. The margins of the cavity must be undercut and the thin edges of the pieces slipped into the undercuts. This should always be done when two pieces are used. When there is a mere crescent of decay at the margin of the enamel, the piece requires delicate fitting, and if the crescent is very extended the cavity can best be filled with two pieces. Large cavities including portions of both crown enamel and neck can be filled with a combination piece of artificial tooth including crown and gum.

The inlays are very carefully ground, being fitted in the cavity from time to time and being examined with a magnifying glass. Care must be taken to preserve the contour of the tooth, or the margins and long ends of the piece will not lie closely. When the piece becomes too small or too delicate to hold in the fingers, it can be set in shellac on the end of a piece of soft wood, and ground safely. The shellac is easily softened in the lamp flame to change the position of the piece, or to try it in the cavity. For very large cavities it is sometimes best, in order to save time, to take an impression of the cavity and have the piece roughly fitted to a model in the laboratory.

When the piece is properly fitted in the cavity, it is set in the colored cement, and after this has hardened the whole is carefully ground. The inlay is allowed to project in a rounded eminence from the cavity, in order to, in a measure, restore the contour of the gum. The effect of this simple operation is surprising,—the deception being complete, for the artificial gum piece seems continuous with the natural gum when moistened, and the great advantage over gold, from an artistic standpoint, is at once apparent.

In conclusion, the writer does not wish to be considered an expert in this work, for he is not a porcelain worker, and only skilled porcelain workers could be expert. But the simple methods here described and which will be demonstrated in clinic, are those which the ordinary practitioner can employ with success with the appliances and materials he has ready to his hand.

The porcelain inlay filling system is, of course, in its earliest infancy; but it has a great future before it if its possibilities are properly developed, for we can not but believe that the porcelain filling is the filling of the future.

DISCUSSION.

Dr. C. Thomas of Iowa, in opening the discussion, said: I hardly know how to commence my remarks on the paper which has just been read. Dr. Thompson's process is different from the one I use. In my process of inserting these fillings, it makes no difference what shape the cavity has so that it is retentive. Where Dr. Thompson grinds his porcelain to fit, I make a matrix by burnishing a thin piece of platinum into the cavity, making my filling in that matrix. I then remove the platinum, and the filling is as near perfect as is necessary. I have only been using this method a short time. I had occasion, however, the other day to see several fillings that have been in two years, they were as perfect as the day they were put in. When I first commenced using gum-colored porcelain fillings a great many of my friends said to me, they will not last; they will wash out. So far I have not found any but what remain perfect. I go farther than Dr. Thompson does. He merely puts his fillings into the visible surfaces of the anterior teeth, I insert them in all cavities.

Dr. W. H. Dorrance of Ann Arbor: I rise, not because I am better acquainted with the subject than any one else, but I have a word or two to add to those of the essayist. I believe on account of the superior density of the porcelain which is taken from the artificial tooth, that it is more valuable for the restoration of corners, or that portion of the tooth which takes on considerable wear or strain in the act of mastication. While it requires a greater degree of skill and more careful manipulation to adjust pieces taken from the broken section, yet I think the results are much better than where the porcelain is baked in the matrix of platinum. I believe porcelain fillings are valuable for certain purposes, that they are more artistic in their look and adjustment; they will do more excellent service on account of the non-conduction of the material than any metal or gold-filling substance; but I do not believe that the system is universally applicable — at least, this is my impression at present. I do think, however, that it is well worth the thought and effort of any practitioner, and more especially those who have not attempted it. You certainly can give yourselves much better satisfaction as well as your patients, by adopting the methods now in vogue of porcelain filling.

Dr. J. G. Reid of Chicago: I would like to ask those who have been interested in this kind of work how they would retain a porcelian filling used in the restoration of the contour of a central incisor.

Dr. Thomas: After preparing the cavity as for a gold filling, cut two retaining points. After having formed the platinum to fit the cavity, insert a platinum pin (a double-headed one); cut the head off, letting it extend into the porcelain. Bake the porcelain around this pin. Pay no attention whatever to contour; the porcelain is cemented in the cavity. After the cement has thoroughly hardened grind the porcelain to just the shape required, which is very easily done, and the fillings are very hard to detect. You may stand three feet from a person and not detect one. I find that in putting in these fillings, it is difficult to get the exact shade of the tooth, but I prefer having them a little darker rather than whiter.

Dr. L. L. Davis of Chicago: I have had opportunities to see quite a number of porcelain fillings inserted by Dr. Land of Detroit, which I understand is the method employed by the gentleman who opened the discussion. If the fillings I saw were a fair representation of the work that can be accomplished by this method, I would not wish to use the method in my practice. I saw a case presented before the Michigan State Society last year, for which was claimed the best results. All the anterior teeth of the patient were in an eroded condition and the enamel had been replaced by means of porcelain. The difference in the shade of the porcelain to that of the natural teeth was very apparent. There were no two patches that matched in shade. The line between the porcelain patch and the tooth looked as though a dirty thread had been tied around each tooth and the effect of the whole was, to me, disgusting.

Dr. Abbott of Iowa: I rise for the purpose of asking a question of the reader of the paper—how he manipulates the pieces he puts in to retain them?

The essayist: In my work I make two pieces of one piece, dovetailed all around; you can do this with one end or one end and a side, fitting it closely, getting as much depth as possible to the piece. The cement will hold it secure so that you can not get it out of its hold. It is not essential that it should be dovetailed if the cavity is sufficiently deep; if the cavity is shallow, however, it would be more difficult.

The idea has been advanced that cement is not effective. I have gum pieces that have been in for two years, and there is little or no effect upon the cement, and it must be borne in mind that the cement is right at the margin of the gum where the mucus would have probably more effect on it than the saliva itself, because the grooves between the piece and teeth are so small that it would take a long time to affect it.

Another point is the durability or effectiveness of the cement in excluding external moisture much more perfectly than any other filling which we use.

Dr. E. M. S. Fernandez of Chicago: This method gives us a great field for work. My experience in porcelain fillings has been confined to crown cavities. I have used the little tips made in England. They are made of clear porcelain, similar to the tooth structure itself. I shellac them on a small piece of wood, and shape to suit the case. I prepare the cavity with corundum points. After that is done I cement them in place with oxyphosphate. I then take corundum wheels, and grind them down even with the surface of the tooth. I find them useful and lasting.

Dr. C. N. Johnson of Chicago: When we have prepared a cavity with a round disc or corundum points, we find that that cavity is not perfectly done, a fissure runs from it in one or two directions, which need to be cut out.

Dr. W. X. Sudduth of Philadelphia: If you take a porcelain tip that is closely adapted to the shape of the cavity, and then put emery into the cavity, and fasten the tip to the end of an engine point, you get the same result, grinding the porcelain filling into the tooth, making a close joint.

OBTUNDENTS OF SENSITIVE DENTINE.

BY T. E. WEEKS, D. D. S., MINNEAPOLIS, MINN.

As a preface I deem it proper to briefly consider the structure and envirorment of teeth. In this we will be aided by reference to the chart.* The enamel, E, we know as the hardest tissue of the body; its substance is principally inorganic, containing as it does less than 4 per cent of organic matter. Like a coat of mail, it protects that portion of the tooth above the gum from injury. In this connection we should note that it is a poor conductor of heat and cold. The major portion of the tooth, D, is the dentine. It is a delicately organized structure and contains about 28 per cent of organic matter. The microscope shows innumerable canals or tubuli, whose general direction is at right angles with the surface of the pulp; within these tubules are the dentinal fibrils, which we believe to be processes of the odontoblasts, which are the outer layer of cells of the pulp, P. This is the tooth-builder, or formative organ. It is made up of cells of the connective tissue group, nerves and blood vessels. In its structure, C, the cementum or root covering, very nearly resembles bone. By means of this tissue the intimate connection between the highly vascular pericementum and the dense substance of dentine is made possible. P. m. indicates the pericementum or peridental membrane, which envelopes the root, acts as a cushion, and supplies vitality to the cementum. The connection between these two tissues is sufficient to insure the retention and usefulness of the tooth after the destruction of the pulp.

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*The diagram used was an enlarged copy of Fig. 369, Vol. I, page 657, of the American System of Dentistry.—ED.

A, is the alveolus or bony socket of the tooth. All these parts are so closely related and interdependent upon each other as to occasion much discussion as to structure, function, etc., but experience has shown us that the portion which can be spared is the pulp, yet this should be removed only as a last resort.

The chief physical function of the pulp is the formation of dentine; after the completion of this process this function is devoted to the maintenance of vitality and the formation of protective dentine, but it has another function—the sensory—which, according to Prof. Black (American System of Dentistry, Vol. 1), is limited to "a peculiar resentment to thermal changes"—"normally a sense of pain upon sudden changes of temperature is the only *sensation conveyed to the sensorium from this organ;*" also, *degrees* of temperature can not be distinguished "unaided by the nerves of other parts, as the lips, gums and peridental membrane." This organ has not the tactile sense, and in common with all organs destitute of this sense, is capable of transmitting (when injured or irritated from whatever cause) only one sensation—pain.

The views held by Profs. Black, Stowell and others, seem to be the only logical explanation of the normal sensitiveness of dentine, viz.: that impressions are communicated to the pulp through the dentinal fibrils or processes of the odontoblasts; that anything that irritates or disturbs the distal ends of the fibrils is felt in the cells themselves, and that from the intimate relation of the odontoblasts with the nerves of the pulp, any disturbance in these cells is immediately felt by the nerve endings and thence transmitted to the sensorium, continued irritation causing increased sensory function. It might be asked how a simple protoplasmic material, such as an odontoblast, can transmit sensations, but physiology teaches that protoplasm is sensitive; that the amoeba, leucocyte and young connective tissue cells exhibit their sensitive properties by certain *motions* when subjected to heat, cold and chemical agents. These odontoblasts and their processes being cells similar to those experimented upon, would naturally respond in like manner to the same influences.

It is further gathered that sensation may be transmitted along the fibrils from the periphery of the dentine to the nerve endings in the pulp, in a manner similar to that manifested in the delivery of the impulse to contraction from the nerve endings along the fibrils of the striped muscles.

To quote again (American System of Dentistry, Vol. 1), "there is but one motor nerve ending in conjunction with a single muscular fibril, no matter what its length (Krause, Koelliker); this is sufficient to communicate the impulse to contraction to the whole fibre, though it may be much longer than the dentinal fibril. Here it will be seen that the passage of an impulse along a protoplasmic body *from* a nerve ending seems demonstrated. In the explanation offered of the sensitiveness of dentine, the impulse passes along a protoplasmic body *to* a nerve ending. The conduction in the two instances is the same, but the impulse travels in the opposite direction."

In a normal condition all dentine contains a certain amount of water. When this is removed the normal function of transmitting impressions seems to be suspended, or at least modified.

Various theories are advanced to explain this; that the tubuli contain only a fluid which is capable of transmitting sensation and pressure, and that this may be removed, thus destroying the function, I can not believe. But that water is present, not only as a constituent of the fibril, but also surrounding it, seems to be true; then if this fibril, being a protoplasmic mass responding to irritation by motion, may not the removal of the water surrounding it, relieve in a degree its natural restriction within unyielding walls thus allowing motion in the fibril, not restricting it to the cell itself? But is this dehydration accomplished without one of two factors; a raising of temperature by heat in the form of hot air, or lowering of temperature produced by evaporation? If the ground I have taken is tenable, either combination would produce the results desired, because it has been shown that the motions of the class under consideration are retarded and finally stopped by cold, but rendered more active by heat, which, when sufficiently increased "causes them to take on a state of tetanic contraction," thus stopping all motion.

We know that heat or cold will produce irritation or pain, also that violent or continued irritation will induce hyperæmia and inflammation; this knowledge should cause us to proceed with extreme caution when resorting to desiccation.

Many chemical agents lower the temperature by evaporation; some dehydrate by means of their affinity for water, as absolute alcohol. Ether and chloroform act mainly by evaporation; others, like chloride of zinc, combine with the dehydrant action a destruction of a portion of the fibrillæ. Others again act only as anodynes; these fail wholly or in part, either because they do not act upon protoplasm at all, or becase they cannot penetrate the dense structure far enough to make their influence felt. Cocaine, while it acts readily upon the nerve endings of mucuous tissue, is inert when applied to dentine, except in certain cases of loose structure. Until recently all efforts at obtunding have been confined to the dentine, but now some efforts are being made where the result seems to be the anæsthesia of the pulp. Dr.Custer thinks that by the Ottolengui method, the pulp shares in the anæsthesia of the fibrillæ; however he does not seem to have proven his hypothesis by the removal of a pulp after employing the method. I have demonstrated to my entire satisfaction that the application of cocaine and alcohol by electrolysis — a la Dr. McGraw — does anæsthetize the pulp, as I have removed ten pulps, all with little pain, and some with absolutely none. In the use of this method it seems that desiccation plays no part, as in all of my successful cases the dentine contained the normal amount of water. Several times our attention has been called to the influence which vibration may exert over the fibrillæ, or nerves of the pulp. It is certain that a severe shock will for the time, benumb the sensory nerves; also, that a succession of slight shocks, no one of which may be perceptible to the senses, will produce the same result. The vibratory method of Dr. Brimmer, consists in the rapid revolution of a coarse bur in close proximity to, or light contact with, the surface to be obtunded. In the organ under consideration, I think the action is upon the pulp, through the dentine, as Dr. Brimmer reports the removal of a pulp painlessly; possibly the nerves of the peridental membrane may contribute some part.

That dentine and its fibrils may be cut with less pain with a sharp instrument and rapid motion, is as patent as that the nerves of soft tissues are often severed without sensation by a dexterous stroke of a keen blade, while intense pain is occasioned if the same incision is made slowly, or with a dull blade; further, this instrument, if a bur, should be so shaped as to clear itself of chips; for when a bur becomes clogged it ceases to cut, but revolves with friction; hence heat and its resultant impression—pain. If the cavity is dry—not necessarily desiccated—any bur will be less liable to clog than if the cavity be moist. The bur should also be a small one, for it requires less pressure, consequently less friction to make it cut.

When we come to consider cutting the dentine, we encounter that added sensitiveness produced in the patient's mind by the senses of sight and of hearing.

Having admitted that nerves or protoplasmic fibrils may be severed by the flash of a keen blade, we must admit that it can be done in very few instances, if the *patient is aware* of the action. No dentist who has listened to the manifestations of pain (?) by screams, during the experiment of revolving a bur in light contact with nonsensitive enamel on the outside of a tooth, can doubt that this hypersensitiveness is induced wholly by the mind—but how to control it, "there's the rub;" control this, and the reduction of actual sensitiveness is easy. I guess there is nothing for it but "mind cure;" but seriously, gentlemen, do not those practitioners possessed of strong personal magnetism, succeed best, other things being equal. Gaining the confidence of the patient is everything. Much may be accomplished in this direction by a calm self-poise, by abstaining from abrupt motions, and by an apparent confidence begotten of a knowledge of what to do and how to do it. Whatever means we may employ should be with a thorough knowledge of the structure and function of the parts involved, also, of the action of the agent, especially if such agent may be destructive to either the organic or inorganic structure. With a clear appreciation of the fact that when irritation is continued beyond a certain point, inflammation follows, it does not seem likely that a man will daily take the risk of passing the border line; yet I can but feel that when those agents or forces which may destroy are employed, that it is playing with fire, and for myself, I prefer after a careful selection and use of instruments, to confine myself to those agents which only lull to sleep, feeling more confident that the object of my attentions will be more likely to awaken to health and usefulness than by the application of harsher means. Again, when the advocate of a new method admits that its application induces "slight pain," I am slow to embrace it, for pain is what I would avoid, and I *know* that without any but mechanical means and careful manipulation I can perform the operation with but "slight pain."

DISCUSSION.

Dr. L. E. Custer of Dayton, Ohio, in opening the discussion, said: Before speaking of obtundents proper, I desire to refer to the imagination, its relation to the cutting of sensitive dentine, and other conditions affecting it. Time is too limited to enter into the metaphysics of the subject. It should suffice to say that a painful sensation is mental activity, a mental condition, or, in other words, a mental operation. The imagination is that faculty of the representative power of the intellect whereby there is a condition for every image formed subjectively, which, for the time being, is related, so far as painful or pleasurable sensations are concerned. Actual suffering of an imaginary or painful operation is according to the cultivation of this faculty, and the manner in which it is reproduced. In the cutting of sensitive dentine the patient is in constant fear of a thrust of an instrument into the pulp. The pain induced by the blunder (and unconsciously) causes a portion of it to be associated with the present actual pain. Or, on the other hand, he may at one time have had a tooth extracted, and, both being dental operations, it is impossible for him to dissociate the pain of that operation from the present. So, then, we have this wonderful faculty to deal with in the cutting of sensitive dentine. There is probably not one here, who, at one time or another, has not had a patient in such an imaginative state of mind that the sight of instruments or medicine would produce fainting. The imagination is affected through the sense of perception, and the senses of sight, hearing and smelling are disturbed in their relations. The strongest influence comes through the sense of sight. A display of instruments will cause patients to recoil with fear. They really imagine that the greater the supply and display of fine instruments the more pain will be produced, when the contrary, as you are well aware, is the fact. On account of this play upon the imagination, the greater part of electrical apparatus should be hidden from view as much as possible, all blood and pus cleared away. On account of our patients being more largely of the gentle sex, bric-a-brac and other articles characteristic of the home should be prominent about the office.

Next to sight comes the sense of hearing. It is a most common occurrence for people to associate with noise the sense of pain, as, for instance, the bursting of a boiler or the falling of a wall with a sudden crash, carrying pain, destruction and death before it. Even the filing or cutting in a laboratory cannot be endured by all. It will be found that a very large majority of women, accustomed to the quietude of home, undergo operations with less fortitude in our offices if surrounded by noise.

The third condition through which the imagination is easily affected would be that of smell. Iodine and creasote bring to the mind of patients painful recollections. Besides these three senses there is one more important factor, and that is the personal magnetism of the operator. His approach and dealings toward his patients should be as if he were dealing with a live and sensitive human being, and not with a cadaver or wooden effigy. He should be sympathetic and perfectly aware of how much pain such operations produce. He should be familiar with his case and know just exactly what to do. He should handle his instruments gently, and all evidences of bungling and carelessness carefully guarded against.

In regard to the use of obtundents proper—as a general thing, owing to the peculiar structure of the dentine as compared with that of soft tissues, those agents which act most efficiently and most effectually upon the soft tissues have not such a profound effect upon the dentine. There is but one exception to this, and this, reduction of temperature, which acts equally well upon both whenever function may be retarded or entirely suspended by change of structure, withdrawal of nutrition, or by reduction of temperature. Change of structure is best produced by coagulation or dehydration. Carbolic acid is most easily used, but owing to its superficial effect upon the dentinal canaliculi and their contents, its effect is not very deep or thorough and can not be relied upon as an obtundent to sensitive dentine. Dehydration has more effect on the dentinal fibril than any other tissue, owing to the structure of the dentine. It has been shown why this method of change of structure is of more effect and is more easily obtained. In the perfect performance of nerve function the dentinal fibril requires moisture or water; it acts in a two fold sense—that which constitutes the fibril itself and that which concerns the space between the fibril and the walls of the canaliculi, in the former acting as a constituent, in the latter as a condition, as the end or labyrinth of the ear. Dehydration can be obtained by adding carbonate of potassium to the alcohol. Dehydration is effective just in proportion as we are able to withdraw the moisture from the dentinal fibril and the canaliculi. For withdrawal of nutrition those agents which have this effect upon the soft tissues have not such an effect upon the dentine owing to its peculiar structure.

Reduction of temperature acts alike upon sensitive dentine and upon the soft tissues. Every organism seems to demand a proper performance of nerve function which is normal. If the temperature be reduced nerve activity is lessened and anæsthesia is produced according to the departure from abnormality. This method of producing anæsthesia of the dentinal fibril is accomplished by the use of rhigolene, or the less violent agent, sulphuric ether, in the form of a spray. If it is difficult to obtain complete coagulation or dehydration, we may use a combination of methods, or may partially coagulate the albumen and partially dehydrate. Along with both of these add reduction of temperature, which will have a better effect than by any single method. A new field is open for an agent or combination of agents to produce a combination of effects. As one of the most beneficial (single) agents for operations upon sensitive dentine, I believe chloride of zinc stands at the head. It must be used with care in certain extreme cases after excavating the mesial portion of a cavity. The fluid extract of cannabis indica may also be used to advantage. I fill my cavity with oxychloride of zinc, allow it to remain until next morning, and after that the cavity is filled without pain.

The recent method given to the profession by Dr. Ottolengui for obtunding sensitive dentine, when analyzed, will be found to work in two different ways by which the nerve fibril may be obtunded—by desiccation and reduction of temperature. Chloride of zinc, as I have said, acts by "change of structure" and dehydration; the Ottolengui method acts by "change of structure" and reduction of temperature.

Dr. William H. Atkinson of New York: Judging from what I have heard, the papers and discussions have been very instructive, and some of the younger members have literally taken the wind out of the sails of some of us old fellows who have done a good deal of hard work. They say we meet here to talk about old chestnuts, and we are repeating what has been done in years gone by.

So we do, and every time we breathe we are going through an old chestnut process, but we are getting something good with every breath we take. I was almost exhausted this morning when I arrived, but after being under the inspiration of the presence of my blessed children, the tone of the papers and discussions has elevated me somewhat from the deep depression into which I had fallen.

We have just had a presentation by Dr. Custer of the mental operations that go on during the practice of our profession. According to the definition of scientists, there is only one thing which we know is a mode of consciousness, and when they say there is physical pain we are sure that they do not know of any pain only by the uncomfortable amount of that something that is within us. We are dealing now with the questions that scientists in years gone by have been groping after, and we are as little children giving delineations and interpretations of what we see before us. We are inquiring after the truth, so that we are really now the *senatori senatorum*, or the senators of the wise men of the world, and yet we can not see that we can flatter ourselves that there is anything we have done that has brought this about; but it is our good works, our affection and regard for each other, that we meet to exchange opinions on these subjects. Our aim is to do the best we can to alleviate the sufferings of our patients, and in doing this the best agent for obtunding the sensitive nerves should be used.

I can remember well the time when I was called a tooth carpenter and nothing but a mechanic, but thank God that day is passed. Our profession has undergone wonderful changes since then; the dentist of to-day is more respected, and he has a clientele that believe in him. How blessed a thing, then, it is for brethren to believe in each other, and in the next place never to be disappointed in the trust we have put in each other.

Dr. A. H. Thompson of Topeka, Kas.:—I would like to say a few words with reference to the therapeutics of the subject. It has been my custom to treat sensitiveness by resorting to oxyphosphate fillings for a week or two weeks. I find it is a great saving of time. I mistrust all instantaneous methods for fear of injury to the pulp. My rule is to simply fill the cavity with oxyphosphate and in a week or two it will be found to give great satisfaction.

Dr. A. W. Harlan of Chicago:—The thing that excited my admiration when Dr. Weeks' paper was read was that it was not encumbered by therapeutic methods of obtunding sensitive dentine, but dealt with principles. It seems to me from much reading and some little thought devoted to this subject that we are about to arrive at a point where empiricism will have to take a back seat and science come in and prove to us that we are able to handle the subject because we know it. I suppose that I am responsible for a good deal of the therapeutical nonsense of obtunding sensitive dentine, but it was all put forth with the best intention and in the hope that something good would come of it. At those times I believed that I had discovered a reasonable panacea for obtunding sensitive dentine, the bugbear of operative dentistry. I find now that many of the agents proposed for this purpose are only useful in certain cases, and that there is no one or two or three methods of using them which will prove universally successful.

The way in which the discussion on this subject was opened by my friend, Dr. Custer, struck me as being the proper way to approach it. I find in actual experience that if you can inspire the confidence of a patient by subduing his imagination, if you please, or play upon any of those faculties that will enable him to rely on your intent to do the least possible injury to his feeling, physical or mental, that you are on the road to obtunding and making operations painless in sensitive teeth.

To come down to the specific methods of obtunding individual teeth, I have this much to say, that I distrust any method of use of the oxychlorides, with the hope of continuing the excavation of a cavity in a few days. That is also true of oxyphosphates. If a cavity is so sensitive that I am unable to operate with facility for myself or ease to the patient, and apply oxyphosphate with the hope of continuing the excavation in a few days, I find an exaggerated sensitiveness at the expiration of a week instead of a subsidence. I have sought to explain that by the fact that there may be an excess of uncombined phosphoric acid, which itself is an irritant. If such fillings are allowed to remain for a greater length of time—two or three months, or longer—the excess of acid will have become dissipated, the teeth will have become accustomed to the thermal changes.

The method of desiccation, where practicable, and not carried too far, is useful in nearly every case. The main trouble in obtaining desiccation is that powerful coagulators are used which prevent the degree of desiccation that you seek to obtain. That, I believe, may be overcome by the substitution of the essential oils instead of such agents as chromic acid, chloride of zinc, carbolic or acid. I would repeat that in employing the desiccating method better results will be obtained by the use of the essential oils, and preferably those having anæsthetic properties, as peppermint, cajuput, and a few others.

Dr. A. E. Baldwin of Chicago: This is a subject that interests us all as dentists. We have to meet it every day in our offices. I have a method that has been successful with me, and which is very simple. It is a sharp bur, used with a very rapid motion, and a light touch.

Dr. J. Taft of Cincinnati: It is hardly proper for me to be called upon to say anything upon this subject for the reason that I did not hear the paper. I infer, however, from the discussion, that the whole subject of the treatment of sensitive dentine is open for consideration. I was much pleased indeed with the remarks made by Dr. Custer. He dealt with principles rather than with modes of accomplishing certain results, but after all both are necessary. It is important to understand principles, and when that is done a correct practice will more likely be adopted.

All cases of sensitive dentine are not alike. Every case has its peculiarities—has its individualities modified by the tissue itself—modified by the influence to which it has been subjected—modified by the constitution with which it is associated, and by the condition in which that constitution is at the time. Now, all will recognize the fact that an enfeebled patient, one who has not the usual vigor and strength, one who is not for the time being well nourished, one who is for the time being under the influence of irritation, is far more subject to this peculiar condition of dentine. Every patient that comes into the hands of the dentist should be scrutinized as to this general condition.

There are all degrees of sensitiveness from that which is just appreciable under contact or thermal change, to that which is most intense and unbearable, as patients will tell us many a time. These conditions ought not to be overlooked.

Then, again, the extent of this affection may be, as you know, merely superficial. You will find when, by a sharp-cutting instrument, a very superficial layer of dentine has been cut away, that the sensitiveness is gone. In some instances this condition pervades the entire dentine of a tooth. Examining a tooth in this condition by cutting into a fissure or the dentine, it will be found sensitive everywhere. These conditions must be noted, and their variations or peculiarities will indicate the precise method of procedure.

One point mentioned was the expectant method of treatment, using oxyphosphate filling for its reparative effect. I do not use oxyphosphates with which to accomplish this result, preferring gutta-percha because it is a non-irritant non-conductor. But this remedy is not applicable in all cases. Where the condition pervades all the dentine, other treatment, such as building up the system, giving it tone, is a necessity. We cannot derive from the local treatment in some cases the benefit desired. There is no such thing as striking upon some particular mode of treatment and management that will yield good results in all cases. Every case requires its peculiar treatment, according to the conditions that exist.

A STUDY OF THE EFFECTS OF COCAINE UPON MAN AND SOME OF THE LOWER ANIMALS.

BY C. P. PRUYN, M.D., D.D.S., CHICAGO, ILL.

Next to averting death, the highest prerogative of the medical man of to-day is the annihilation of pain. And in so far as he is able to meet this want of suffering humanity without dangerously interfering with life's nutritive forces will he merit success in the practice of his profession. The introduction of ether, chloroform and nitrous oxide marked an epoch in general surgery; and therewith a blessing was conferred upon mortal man which has been the means of saving thousands of lives where one has been lost from the effects of these agents.

Ever since the days of Wells and Morton, other active minds have been anxiously seeking for some safe means of producing local anæsthesia, and while we have not yet arrived at that point for every case, it remained for Dr. Koller of Vienna, to startle the world with the results of his experiments made with cocaine. This new remedy, about which so much has been written as a local anæsthetic, is classed along with such drugs as caffeine and theine, although there have been some cases reported in our late literature where the attempt has been made to antidote its effects with these remedies.

It is quite similar in its action in small doses to caffeine and theine. If it is analogous to caffeine and theine in its effects, they can not be antidotes. Caffeine and theine are recommended as antidotes, but they are not, as they each have a similar action. It has been used in the form of elixirs and wines and in various other forms medicinally, but some of our eminent physicians and neurologists, who are making a study of it, report the unpleasant effects that follow from its continued use to be so detrimental to the general health, that I see no field at all in general medicine for cocaine. I see no place where other drugs can not take its place and do better work. The only use I find for cocaine is for the surgeon and rhinologist. The results have proven unsatisfactory where it has been used in general medicine, as it has led to the cocaine habit, which has an effect much worse than the opium habit. There are in our asylums and hospitals at the present time quite a number of victims to the cocaine habit, but they have become so—not all, but most of them—because they learned that cocaine was an antidote to morphine, and feeling the bondage they were in to this opium habit, they wanted to break from it. So they began the use of cocaine, and while they have broken up the morphine habit, they have contracted a worse habit. So when you hear physicians and others say there are many who have become cocaine victims, make up your mind that they were first morphine victims. We have had one very marked case in our city: A physician who from hard work and being up nights considerably became so nervous that he could not sleep readily. He took a little morphine to produce sleep, and thus became addicted to its use, and the desire for it grew upon him until he became thoroughly addicted to the opium habit. He realized his condition, saw it was injuring him, and then began taking cocaine as an antidote until he became a total wreck. It destroys worse than opium, alcohol or hasheesh, and I fully endorse the language of Dr. Mattison, when he says:

"I think it for many—notably the large and enlarging number of opium and alcohol habitues—the most facinating and seductive, dangerous and destructive drug extant; and, while admitting its great value in various disordered conditions, earnestly warn all against its careless giving in these cases, and especially insist on the great danger of self-injecting, a course almost certain to entail added ill. And the need of caution against free and frequent use obtains in other cases, for there may come a demand for continued taking that will not be denied."

So when you think of prescribing cocaine, or using it in dental surgery think also of the dangers into which it leads your patient.

In my experiments I have noticed in a very few cases where a small amount has been given, even as small as an eighth of a grain, one of the first effects to be hyperæsthesia. The patient shows great evidences of joy, of pleasure unbounded. After a little, as you give more of it, other symptoms are produced, but not this symptom of great joy. Loquacity is one of the marked physiological symptoms. A short time since I operated upon a lawyer, for whom I had just administerd a small dose of cocaine, a man who is generally very quiet in my office, but I wanted to see if the effect would be as I thought it might, so I sounded him upon a subject that I thought he would like to talk upon if I got him started, and away he went—could hardly stop talking. His talkativeness was followed with nasuea and peculiar muscular weakness. He tried to rouse himself and get out of this peculiar feeling, but he could not do it, and it was an hour before he was entirely relieved from the effects.

I take the liberty to quote an abstract from an article in a recent journal, where a gentleman had an experience that I should dislike very much to have. He did not know what it was, and heads his article, "Was it Cocaine?" as follows:

"A dentist being called in to extract the carious teeth, and finding the patient very nervous, gave a whisky toddy, followed by three hypodermic injections into the gum of a six per cent solution of Cocaine Mur." But the doctor does not state the number of minims or drachms of the six per cent solution that was used, so that our investigations into the history of the case as he reported it are somewhat in the dark. He states that she fainted immediately after the injections. The physician arrived in the course of fifteen or twenty minutes afterward, and found her in the following condition: "Insensible, pupils widely dilated, jaws locked, head drawn back, the extensors of the arms contracted and hands clinched, feet extended and incurved, breathing very rapid (about 40 per minute) superficial and spasmodic, pulse 80 and rather hard, surface cold."

"I had her inhale aromatic spirits of ammonia and the extremities rubbed vigorously with mustard. In a few minutes her respiration was fuller and easier, the extremities relaxed, but the trismus and insensibility remained. In ten minutes she had another convulsion in which the opisthotonos was well marked, this spasm lasting about ten minutes altogether. The same treatment was administered as in the preceding convulsion, but apparently without result. This convulsion had barely passed off when another came on of a like severity and duration. After this, the third convulsion, the trismus was less marked, and with some difficulty she swallowed a half drachm each of F. Ex. Lobelia and Tr. Asafœtida (the only antispasmodic at hand). She had one convulsion about twenty minutes after this, but it was much milder than the preceding ones. After this she was thoroughly relaxed and very prostrate, her only complaint being of soreness throughout the muscular system, and a sense of weakness."

My point is, no man ought to use cocaine who has not administered it to some of the lower animals, or until he has seen some deaths from it among the lower animals. There the symptoms become so marked that he can readily recognize them in the human subject when even slightly shown. This man when he asks "Was it cocaine?" states the symptoms as I have observed them in my experiments, but, if I had not experimented, I would not have known them so thoroughly, because I have never had a patient get in this condition and I would have doubted whether these symptoms were cocaine, or whether it was the result of shock, but, having experimented upon dogs, I know at once when I see these symptoms in the human subject what they are, and what to do, because they are similar to symptoms I have observed in the dog."

"It appears that cocaine is capable of producing tetanic convulsions when administered in large doses; but the short space of time that elapsed between the administration and the onset of the convulsions would leave the question an open one. I may add also, that the surface temperature was never raised above normal, and that she had no inclination to sleep, for several hours after the convulsions had ceased."

Dr. J. Leonard Corning of New York, has published a book on "Local Anæsthesia," wherein he gives his method of using cocaine with a clinical history of a large number of interesting cases in the use of this drug. He uses cocaine in general surgery, in a very weak solution, and employs it for amputations, capital operations, in the removal of tumors, and the like. His method is a very good one. He first exsanguinates the part to be operated upon by the use of the Esmarch bandage up to the seat of the operation. Then with a fold on the opposite side of the extremity operated upon, he passes beyond the part to be treated, and makes one or two wraps of the bandage, when a one or two per cent solution of cocaine is superficially injected. Then, with a long needle, he penetrates the deeper tissues, even to the bone, with five, ten or fifteen minims of this weak solution, when he is enabled to operate upon both the soft and hard tissues, painlessly. As soon as this last injection is made, a tourniquet is applied to the body portion of the extremity, which prevents the drug being carried into the general circulation, and in this manner the anæsthesia of the part may be made complete for several hours. Then, after the operation is completed, the tourniquet is gradually loosened, in order that the drug may be slowly carried into the general circulation, and, in this way, so diluted and dissipated that the systemic effects are almost, if not quite, nil; and why? Because he has all the effects of the drug held in just the part of the body that he wishes to operate upon. The circulation of the part having been suspended, or nearly so, the drug is held in just that position where he wishes it for hours, if he so desires. When we operate upon the mouth it is almost impossible to exsanguinate, or remove the blood, from that part of the body, so when we operate upon the mouth the effects are lost within a short time. Upon other parts of the body where it is impossible to apply the Esmarch bandage, he uses rings of various devices, also hæmostatic clamps, which, by pressure, incarcerate the cocaine in the field of the operation. If we could make use of a similar method upon the parts we operate upon, I feel satisfied that we could use this valuable drug with much less danger than attends our present use of it, for it is a fact that while a comparatively large amount may be used in the system at parts remote from the nerve centers, a very small amount injected into the vascular tissues, that we as dentists operate upon, may, and does often, cause very grave symptoms. Our operations are all near the main nerve centers that control circulation and respiration, and the drug, carried as it is by the circulation, has only a short distance to travel before it acts upon the peripheral nerves that convey sensation to these centers, and a disturbance of the nervous equilibrium is very soon manifest. Cerebral anæmia, even to the point of syncope, is sometimes seen with even a very small dose, and within three or four minutes after the drug has been injected, which is an illustration of the theory just advanced.

If we could devise a system of clamps that could be applied to different portions of the jaw, so as to hold in abeyance the blood supply, the probabilities are that we could use a larger amount of the drug, with little or no fear of toxicological effects being shown. As we operate now, without such appliances, the anæsthesia lasts, as a rule, not more than ten or fifteen minutes, as I have observed it.

When cocaine first came into use many men said, "Well, we use it, and it is a failure. We use it hypodermically, and get no anæsthesia. It does not lessen the pain of extraction with me." They say it is impossible theoretically to have a remedy that will act upon that dense, bony structure. My experience is just the opposite. I say I use it and I find it satisfactory. Another man uses it and he says it does not act as an anæsthetic. The difference is largely in the method of using it I think. Instead of injecting it into the periosteum, he injects it into the gum tissue, whereas I inject it, for operations upon the bone, for the extraction of teeth, for the removal of portions of the jaw, into the periosteum. If you inject it into the gum tissue, it acts as an anæsthetic on that part, that is all, and if the tissue is very loose and flabby, the injection is so quickly dissipated that the anæsthesia is only partial. If you want it for an anæsthetic in the extraction of teeth, you must inject it in the way just described, to produce the best results.

It requires much greater skill to give a hypodermic injection for a surgical operation upon the jaws than it does to give an ordinary hypodermic injection where there is an abundance of tissue in which to place the needle. You know how the ordinary hypodermic point is made. It is quite long, and if left in that condition you may get it caught in the bone, and then it bends, or prevents you putting it in as far as you wish to have it. My method is to take the ordinary hypodermic point, as it comes from the shops, and place it on an Arkansas stone and grind the extreme penetrating point so that it is comparatively blunt, or with only about one-half the beveled edge that it has for ordinary uses.

The syringe should have a minim gauge, a glass barrel, and finger guards, and should be kept absolutely clean, and never used for any other purpose, and before using should be made thoroughly aseptic. In making the injection, great care must be taken to inject no air into the tissues. This may be avoided by drawing the solution into the syringe, then turning the point upward, and expelling the liquid.

To avoid running the point against the edge of the alveolus, and also to avoid the thick, tough margin of the gum, let the point enter one-eighth of an inch from the margin, and following the surface of the bone, press it in at least three-eighths of an inch. If the beveled side of the point is held against the bone, it will avoid sticking into it. Press on the piston gently, so as to expel the liquid a drop at a time. In this way, the only pain caused is just as you pass through the mucous membrane, and this pain can be prevented by painting the part with the solution before you attempt the injection. Now as you inject a drop at a time it anæsthetizes the tissue just in advance of the point. After injecting, hold the instrument in position about a minute, so that the liquid may be taken up by the tissues and not spurt back when the point is removed. Unless this precaution is observed, the solution is liable to pass back into the mixed fluids of the mouth and be swallowed, which is very apt to produce severe nausea and emesis. Pursue this same method on both the labial and lingual sides of the tooth. Three drops of a four per cent solution on either side, as just described, injected well into the periosteum, will so thoroughly anæsthetize the soft and hard tissues that tooth extraction, or the complete removal of the bone may be effected painlessly in almost all cases. The pain of the injection is very slight, and if the syringe is thoroughly aseptic, no abscesses will follow, and the wound made by the point will usually heal by first intention. In taking impressions in cases where there is great irritability of the soft palate, an application to the mucous membrane of that part, of a four per cent ethereal solution is usually satisfactory.

I am often asked "Upon what tissue does it act best in the mouth?" I find from experience that it acts best upon the dense, fibrous gum tissue. Of course, you know there is a difference in different mouths. In one there may be an abundance of loose, flabby tissue, and the effects of cocaine in such cases would be less profound than where the tissue is fairly healthy, and of dense, fibrous texture, because in the dense tissue the drug is held just at the point you wish to have it, whereas in the other case, on account of the looseness of the texture, the effects are dissipated. For that reason in the extraction of wisdom teeth, particularly in the lower jaw, the results are not as satisfactory, because you cannot get into the dense, fibrous tissue, as you would like.

Its physiological action in small doses is to produce cerebral hyperæsthesia, dilatation of the pupils, loquacity, joyful intoxication, with a peculiar feeling of restfulness and peace with all mankind.

The line of demarcation between the physiological and toxicological effects is so faintly drawn that it is impossible to tell where the one ends and the other begins. In some cases the poisonous effects may be shown at once, even from a very minute dose, while in other cases the various physiological stages are well marked and the poisonous symptoms not exhibited until a very large amount of the drug has been given. The usual poisonous symptoms are first shown by an increase of circulation, with an increase in the number of respirations and a decrease in the depth of the same, sometimes quite marked. Another early symptom may be syncope; or that peculiarly disagreeable feeling that precedes fainting. It is a very unpleasant feeling and may come on almost instantly. Your needle may be hardly removed from the gum tissue before the patient begins to show signs of syncope, palpitation of the heart, dyspnœa, præcordial pains, a sensation of stifling, or inability to obtain air may be experienced, dryness of the mouth and fauces, thirst, also tingling of the extremities, muscular weakness, cold sweats, peculiar muscular movements, almost amounting to convulsions, and if not interfered with will doubtless go into convulsions, a peculiar pendulous oscillation of the head and muscular inco-ordination.

Its chief action seems to be upon the nerve centers. In frogs it first paralyses the terminations of the sensitive nerves, and afterward abolishes reflex action. In the mammalia it first stimulates all the nerve centers, and especially the psycho-motor nerve centers. This general excitation is followed by a slight enfeeblement. Small doses increase reflex action. Large doses tend to paralyze. Respiration and circulation are quickened, except by fatal doses. The blood pressure is increased by the stimulation of the vasomotor centers. Large doses naturally have an opposite action and lower the blood pressure. The inhibitory nerves of the heart are readily excited by medium doses. The striated muscles are not directly influenced by cocaine. Acute poisoning by cocaine causes muscular spasms, and, in consequence, a marked elevation of the temperature. Death appears to result from asphyxia, caused by respiratory paralysis, the heart continuing to beat after respiration ceases.

In my practice while I have some times been a little annoyed by the slight poisonous effects that have been manifest, I have never given enough of the drug to cause me to feel alarmed, but if I had not experimented on some of the lower animals, symptoms I have seen, in the human subjects, would have alarmed me.

Now, what should be the treatment? A careful watch should be kept over the patient, and any signs of heart failure or dyspnœa should be treated at once. If you have the symptoms of syncope, why treat for syncope, by everting your patient, putting his feet higher than his head, slapping the face with cold, wet towels vigorously, application to the nostrils of strong spirits of ammonia, or nitrite of amyl, or the Sylvester method of artificial respiration; injections of brandy, or alcohol, aromatic spirits of ammonia, both hypodermically, and by the mouth; injections of morphia, a quarter-grain, unless your patient is known to have an idiosyncrasy against morphia. Two or three drops of the nitrite of amyl on a handkerchief will probably be enough at a time, as this is a powerful drug, and needs to be used with great care. Do not lose sight of the beneficial effects to be derived from artificial respiration, for if this drug kills by paralysis of the respiratory centers, the simple fact of mechanically sustaining respiration may be the means of sustaining the life of the patient. Thirty drops of the aromatic spirits of ammonia given by the mouth, and repeated two or three times, or even more, if necessary. It might be wise to give this ammonia preparation a few minutes before beginning the operation as a prophylactic. An eighth grain of morphia hypodermically, a half hour before administering the cocaine, is another very wise prophylatic measure to adopt. As the systemic effects of cocaine are so very rapid, and the effects of morphia so comparatively slow, and as one drug seems to be an antidote to the other, it would seem to be theoretically correct to first give the morphia, and when its effects are apparent administer the cocaine, and not wait to give the morphia after the poisonous effects of the cocaine are shown.

While in actual practice, morphia seems to be an antidote to cocaine, the method of using it after the cocaine symptoms present, is like putting a policeman on a freight train to catch a thief who has just departed on the lightning-express.

Believing that morphia is an antidote to cocaine, I instituted a series of experiments, combining the two drugs in one solution, and where this combination was used the toxic effects of cocaine were manifested, even when a very small amount was administered, which seems to show that positive antagonism exists between these two drugs when used in the same solution.

The following clinical history of a series of experiments that I have made upon dogs may serve to point out more fully the dangers of the drug when given in large doses:

EXPERIMENT NO. 1. (FEMALE ADULT DOG.)

Four Per Cent Solution Cocaine Hypodermically.

9:00 Minims 30 or grains 1$\frac{2}{10}$.
9:10 Minims 30. Labored and irregular pulse.
9:15 More irregular and weaker.
9:20 Minims 30.
9:30 Minims 30. Heart weaker and slower.
9:40 Minims 30.
9:50 Minims 30.
10:00 Minims 30.
10:05 Minims 30.
10:10 Minims 30.
10:15 Minims 30.
10:20 Minims 30.
Total 13$\frac{2}{10}$ grains.

Various stages, as follows:

At first expressions of great delight and joy, such as a favorite dog might show upon the return of his master after an absence of several days.

Pupils dilated—she gradually becomes quiet and apparently apprehensive of some approaching evil. Head begins to move about from side to side, with an occasional sudden drop of head, as if to avert a blow on the top of the cranium; then rhythmical, pendulous oscillations of head from side to side; next begins to walk rapidly back and forth in the same line, or in a circle; next moves the body around and around in a circle, as if the hind legs were a pivot, Next muscular inco-ordination shown most markedly in the hind parts; hind quarters of the dog weave about from side to side, with final loss of control of the whole system, when tetanic spasms ensue, which gradually become more frequent and severe until death.

EXPERIMENT NO. 2.

Four Per Cent Solution Cocaine.

9:40 Minims 45.
9:45 Muscular Tremors.
9:50 Minims 30.
10:00 Minims 30.
10:10 Minims 30.
10:20 Minims 30.
6$^{3}/_{5}$ grains in all.

In this case exhilaration was first shown; next that peculiar apprehensiveness of approaching evil; then an uneasy nervous walk back and forth over the same ground for fifteen or twenty minutes, then the pendulous oscillations of the head, which gradually passed away with complete recovery, apparently, in a few hours.

EXPERIMENT NO. 3.

Twelve Per Cent Solution Cocaine Hypodermically,

9:15 Minims 25 or grains 3.
10:00 Minims 25.
10:15 Nausea and emesis.
10:20 Very restless and nervous.
10:35 Moving about in a circle as if the hind legs were a pivot.
11:00 Minims 25.
11:10 Quite excited and moves rapidly.
11:15 Down on his hind legs, but after a strong effort gets up again and moves about very excitedly.
11:18 Minims 25.
11:20 Severe tetanic spasm same as the one that died as narrated above. Death expected every minute.

11:22 Gave hypodermically morphia, grains ¼ and Atropia, grains $\frac{1}{150}$. Spasms ceased *at once* and the whole condition of the dog changed almost as quick as lightning—changed from that very severe condition of muscular contraction to that of comparative calm and easy relaxation.

Respirations nearly normal in frequency and depth. Now as it was 12:00 o'clock, midnight, and the dog seemed so much easier, although somewhat restless, and inclined to walk back and forth the length of the room, we gave him as a final night-cap Morphia grains ¼, Atrophia grains, $\frac{1}{150}$.

At 8:30 the next morning he had apparently not slept at all during the night, as the same peculiar restlessness was still markedly shown and the dog still walking, keeping up an almost incessant movement of the whole body. Pupils still dilated and general symptoms of great weariness, continual whining and some nausea. Now gave Morphia grains ¼, Atropia grains $\frac{1}{150}$—he soon slept and in three hours the only abnormal symptoms were great weariness and in three days he was apparently as well as ever.

This dog had 100 minims of a 12 per cent solution, or grains 12, and had arrived at the first part of the last stages of cocaine poisoning, viz.: the tetanic spasms, and when at that stage, when death seemed imminent in a very few minutes, Morphia ¼ with

Atrophia $\frac{1}{150}$ stopped at once the spasm and the muscular rigor that has always preceded death in all dogs I have killed by this drug, which seems to show that opium is an antidote to cocaine — at least in the case of dogs. The condition of insomnia has always characterized the effects of a toxic dose in my observation on both man and the lower animals.

EXPERIMENT NO. 4. (YOUNG ADULT DOG.)

A Twelve Per Cent Solution of Cocaine given Hypodermically.

9:15 Minims 25 or grains 3.
9:30 Very Tremulous.
9:40 Opisthotonos — Pupils Dilated.
9:50 Tail wags and the dog seems better.
10:10 Mouth open, tongue out and panting quite hard.
10:20 Spasmodic efforts to breathe.
10:25 Better and exhilarated.
10:55 Much better and feeling very sociable and pleasant.

11:00 Light spasm, but soon recovered with a little weariness shown the next day. In this case with a 3 grain dose we have the physiological effects shown and also the toxicological effects, which are more shown than I have ever seen them in the human subject or care to see.

EXPERIMENT NO. 5. (YOUNG ADULT DOG).

Twelve Per Cent Solution Cocaine Hypodermically. Pulse 116.

2:30 Injected 25 Minims, felt well; wanted to play.

2:35 Felt queer—looking as though listening. Standing still, licking chops; some dilating of pupil. Pulse 88—irregular.

2:45 Increase of these symptoms with muscular weakness.

2:55 Minims 25. Head constantly moving as though choking; trying to back away, still licking chops. Pulse full and regular—rapid.

3:05 Pulse 108. Constantly moving as though in play—emesis; increase of dyspnœa.

3:10 Same as before. Muscular movements weak and incoordinate. Keeps moving without making headway; turns as though on a pivot.

3:25 Minims 25.
3:35 Minims 25.

3:50 Symptoms improve for a few minutes, when severe spasms set in which result in death after ten minutes of severe struggling.

EXPERIMENT NO. 6. (YOUNG ADULT SKYE-TERRIER.)

Ten Per Cent Solution Cocaine Hypodermically.

7:25 Minims 25 or grains 2½.

Very quiet for ten minutes, then very restless and uneasy, moving about as if in a cage; walking back and forth.

8:00 Better.
8:05 Minims 13 or grains 1¼.
8:08 Very unsteady in his movements; muscular inco-ordination; most marked in the hind legs. Tetanic spasms—worse.
8:10 Morphia ¼. Atropia 1-150.
8:15 Morphia ¼. Atropia 1-150.
8:20 Died in a severe spasm.

Post mortem revealed a temperature intensely high; the whole viscera seemed like a furnace so intense was the heat.

Lungs congested—heart, right side, engorged with very black blood.

Kidneys congested also.

It took only 3 ¾ grains to kill this one, and the antidotal powers of morphia in this case seems to have been nil.

EXPERIMENT NO. 7. (LARGE BLACK DOG.)

Ten Per Cent Solution Cocaine Hypodermically.

9:00 Minims 12½ or grains 1¼
9:15 Slight effects.
9:25 Minims 12½.
9:35 Minims 12½.
9:50 Minims 12½.

9:55 Slight pendulum-like motion of head. Seems to feel very queer and apprehensive of some approaching injury.

10:00 Minims 12½. Licking his chops and very uneasy.

10:25 Minims 12½.

10:40 Very restless and turns around with his hind parts as a pivot.

10:45 About to go into spasm when Morphia grains ¼ Atropia $\frac{1}{150}$ is given, when he improves at once and is apparently all right the next morning.

This Dog had 7½ grains during an hour and a half with an antidote of Morphia ¼ grains and came out of it all right, but was killed the next night with the same amount used, viz: 7½ grains with no morphia.

EXPERIMENT NO. 8. (SMALL DOG.)

Cocaine Hydro-chlorate Ten Per Cent.

9:00 Minims 12½ or 1¼ grains.
9:15 Dog appears very uneasy, and like the other experiments apparently apprehensive of some approaching physical danger. Pendulous motion of head.
9:25 Minims 12½. Movement of head increasing.
9:35 Minims 12½.

9:50 Tetanic spasms; not very severe, and soon pass off; then nausea and vomit. Severe spasms soon set in, and death results at 9:55. This dog succumbs at 55 minutes from the first introduction of the drug into his system, with only 3¾ grains. Post mortem reveals lungs congested, right heart distended and engorged with very black blood. Left heart nearly or quite empty. Kidneys also congested.

EXPERIMENT NO. 9. (LARGE DOG.)

Ten Per Cent Solution Hydro-chlorate of Cocaine.

8:05 Minims 25, or grains 2½.

8:10 Restless. Head moves from side to side. Licks his chops. Tail wags. Moves uneasily about the room. Whines.

8:25 A little better. Effects of the drug not so apparent.

8:30 Minims 12½, or grains 1¼. He now begins his tramp about the room. Very restless and uneasy.

8:45 Acts a little better.

8:55 Minims 12½, or grains 1¼. No increase of the effects of the drug are seen for five minutes.

9:00 P. M. Minims 25, or grains 2½ are given.

9:05 Moves about in a circle as though the hind parts were a pivot on which the body turns. He now begins to pant and appears to have great trouble in breathing.

9:10 Severe spasms of a tetanic nature set in and he continues from one spasm to another for the space of ten minutes, when death relieves him of his sufferings.

This dog was operated upon twenty-four hours previously and the same amount of the drug used, viz., 7½ grains, and just as he appeared to be going into one of the spasms a hypodermic of morphia, grains ¼, with atropia, grain 1/150 were given, which saved his life at that time.

Now in this experiment he is given the same amount of cocaine as on the previous occasion, and without the antidotal effects of morphia dies with the usual tetanic spasms.

It is not necessary to enlarge upon this clinical history, but simply to give you the benefit of my researches, which seem to show that morphine is an antidote to cocaine.

I have a record of over 500 cases where I have used this drug in actual practice. I have here that report, or rather the original case book, giving the details in full of each case with its clinical history.

The author has a tabulated record of over five hundred cases where cocaine was used in his practice, and the following thirty are taken from the Case Book just as they appear there. A four per cent aqueous solution of the hydrochlorate of cocaine was used in all these cases, hypodermically. Latterly he has been using a smaller amount, not more than one-half the amount used in the first fifty-six cases, and the anæsthesia has been quite as profound, and the toxic effects very rarely seen.

Case.	Age.	Sex.	Physical Condition.	Amount injected.	Operation.	Amount of anesthesia.	Pulse.	Respiration.	Nervous Condition.	Remarks.
1	25	M.	Nervous anemia.	m. VIII.	Removal first molar.	Complete.	Normal	Normal.	Normal.	
2	30	M.	Good.	In 2 injections m. V.	Removal low molar. Dead.	Partial.	Normal	Normal.	Normal.	
3	31	F.	Good.	m. XII.	Excavating cavity in left upper bicuspid.	Complete.	Nor. or a lit. ab.	Slightly ab. normal.	Slight excitement.	
4	31	F.	Good.	m. II.	Wedge bet. low. cusp., and excavation of cavity.	Complete.	Normal	Normal.	Normal.	
5	31	F.	Good.	m. VI.	Ext. three roots of upper molar.	Complete.	Normal	Normal.	Normal.	
6	29	F.	Good.	m. X.	Ext. first molar and second bicus. left upper.	Complete.	50	Below normal.	Slight excitement.	Nausea and retching; no food had been taken for 48 h.; ext. of upper teeth very satisfactory. Lower unsatisfactory.
7	29	F.	Good.	m. VI.	Lower wisdom.	Not at all.				
8	22	F.	Good.	m. V.	Prep. of cavity of R. L. 1st molar buccal surface.	Partial.	Normal	Normal.	Normal.	Pain was somewhat mitigated.
9	37	F.	Good.	m. VIII.	Opening through alveolus for abscess 1st R. L. bicuspid.	Complete.	Lively.	Little above Normal.	Normal.	
10	19	F.	Good.	m. VI.	Prep. of cavity R. L. cuspid.	Partial.	Normal	Normal.	Normal.	Patient satisfied that the pain was mitigated.
11	48	M.	Good.	m. XV.	Ext. R. L. second molar.	Complete.	Normal	Normal.	Normal.	
12	48	M.	Good.	m. IV.	Ext. R. U. cusp. Undeveloped very long and difficult.	Complete.	Normal	Normal.	Normal.	Suffered a little pain at the last —long operation.
13	24	F.	Good.	m. X.	Ext. L. L. 1st bicuspid. Removal of large mole on chin.	Complete.	Normal	Normal.	Normal.	
14	13	M.	Good.	m. VIII.	Ext. R. U. first molar.	Nearly complete.	Normal	Normal.	Normal.	Slight depression following.
15	29	F.	Slight fig.; frail; small.	m. XII.	Ext. right low, third molar.	Nearly complete.	120	30	Hysteria at times, but not bad.	Dyspnœa, garrulous, muscular weariness for several hours, and sick several days following. The same am't given one week later for a like operation on opposite side mouth, with anæsthesia complete; no systemic obser'le.
16	22	F.	Frail; suff'd fr'm nerv. prostrat'n for 2 years	m. V.	Wedge between first and second molars.	Nearly complete.	150	40		
17	20	F.	Good.	m. XII.	Ext. r. l. second molar.	Partial.	Normal	Normal.	Normal.	Dyspnœa; musc'r weakn's; hyst'l.
18	48	M.	Syphilitic.	m. XII.	Ext. l. l., 1st molar and cutting away carious bone.	Complete.	N.	N.	N.	Patient says was some mitigat'n of pain; partial success only.

19	43	M.	Syphilitic.	m. XII.	Cutting away carious bone outer plate of alveolus over L. U. central.	Nearly complete.	N.	Normal.	Normal.	
20	22	F.	Good.	m. V.	Excavating cavity in R. L. 1st molar buccal surface.	Partial.	N.	Normal.	Apparently normal at time of operation.	Peculiar feeling for several hours after; nervous; a little dizzy.
21	40	M.	Good.	m. V.	Removing sequestrum of bone from outer plate alveolus.	Complete.	N.	Normal.	Normal.	
22	33	F.	Good.	m. X.	Fitting band for G. crown.	Complete.	N.	Normal.	Normal.	Patient very susceptible to pain before using; very quiet after; no pain when fitting the band; patient pleased.
23	33	F.	Good.	m. V.	Prep. of very sensitive cavity.	Complete.	N.	Normal.	Normal.	
24	23	M.	Good.	m. V.	Wedged bet. upper centrals and excavating cavity.	Nearly complete.	N.	Normal.	Normal.	
25	28	M.	Anæmic overworked nervous.	m. XII.	Ext. R. L. third molar.	Complete.	N.	Normal.	A very little excitement.	
26	28	M.	Anæmic overworked nervous.	m. X.	Ext. L. U. third molr. Ext. R. L. 2nd bicuspid.	Complete.	N.	Normal.	Normal.	
27	50	M.	Frail, Dyspeptic.	m. XX.	Ext. R. L. 2nd molar and roots of 1st molar.	Nearly complete.	Above Normal	Strictly above normal.	A very little excitem't; talkative.	Experienced some pain.
28	28	F.	Good.	m. X for each tooth.	Ext. both U. third molar.	Complete.	Normal	Normal.	Good.	
29	30	M.	Good.	m. XII.	Ext. L. L. 2nd molar.	Complete.	A little above N.	A little above normal.	Tremulous.	
30	23	F.	Good.	m. XII.	Ext. R. U. 1st bicus.	Complete.	Normal	Normal.	Normal.	

DISCUSSION.

Dr. Templeton of Pittsburg: Have you noticed any toxic symptoms in the use of the drug?

The Essayist: Yes, sir. I have used it in almost all kinds of cases, and I cited instances where I would refrain from using it. I recall one case in which only a four per cent solution was used, and the toxic effects were quite marked, there being hysteria, etc. In such cases I would avoid its use. Some people have heard of cocaine, and are greatly alarmed the very moment you mention it to them. The thought or fear, acting upon the brain as it does, would contra-indicate its use. I would not use it on a patient who fears it, for it might produce cerebral anæmia, which is a condition you would not like to have. Another class of cases in which I would refrain from using it is in pregnant women.

Dr. Kester of Chicago: In what part of the anatomy of the dog were the injections made?

The Essayist: In the upper portions of the back and body, just where it was convenient. I would like to add, in this connection, that dogs under the influence of cocaine, instead of being vicious or unruly, are quiet and peaceful. The drug seems to have such a powerful effect on some of them that they are inclined to stay around you, seeming as though they wanted you to help them, and feeling as if man might be of service to them.

Dr. J. H. Martindale of Minneapolis: I notice that in a number of the cases reported by the essayist, at the autopsies there was congestion of the kidneys as well as of the lungs.

Dr. Morrison of Indianapolis: The gentleman has so thoroughly opened the discussion and so thoroughly closed it that there is nothing left to be said. He has conducted his investigations in a way that has been highly satisfactory to myself, and in a manner that is very creditable indeed. He has referred to the physiological and toxicological effects of cocaine, so that it will not be necesssary for me to dwell on that portion of the subject. I will say that in my use of the drug, I have confined myself almost exclusively to its topical effects, applying it to the gums and the surrounding tissues exclusive of the hypodermic method. I might say that in almost every case, where the rubber dam was applied, the application of cocaine has produced satisfactory results. We know when we have tight ligatures under the gums, operations are attended with pain, and cocaine in almost all of these cases reduces the pain, and in such instances I make it about as strong as it can be used. I take a bottle of the crystals, dip a little pledget of cotton in water, making almost a syrupy solution of the cocaine, and paint it around the gums before putting on the rubber dam.

Dentists sometimes get colds in the head, as is the case with myself; at such times take a mild solution of cocaine, a two or four per cent solution with a camel's hair brush and sniff up a few drops of it, this will settle the cold. It will stop it permanently. An application or two will suffice. The only bad effect that I get from its use is where it is injected hypodermically. I am always afraid of that operation. In most cases it is not necessary. If we have a bad case of extraction, I think in almost all instances the exhibition of ether or gas is far better, and less risky than the application of cocaine hypodermically. A case I had, led me to believe that in a great many instances where there was trouble from the application of cocaine hypodermically, it was due to carelessness on part of both the patient and myself. I was injecting it for the extraction of a third superior molar root, and by means of a sudden pushing forward of the head of the patient the needle went through the process I expected to inject it into, and the greater part of the solution went into the throat of the patient, and as the patient was a little susceptible to sudden frights under ordinary circumstances, you can imagine what would follow from spasmodic contraction of the muscles of the throat. It was a long time before the patient was cured. I think that in a great many cases where we have had these spasmodic contractions of the muscles of the throat, it has been due entirely to getting a few drops of the cocaine solution into the throat, and relieving the sensibility perhaps of the epiglottis, so that in the effort to swallow the patient got it down in the throat.

It is unnecessary for me to further discuss this subject, except to say that in all of these cases where we can operate on the soft tissues, I think we can get benefit from its use topically.

Dr. Martindale of Minneapolis: It has been since January, 1885, that I have been using this drug hypodermically to some extent. I have not operated on the lower animals in the way the essayist has done. We are indebted to him for his having informed us of the results of his efforts. I have made some experiments for the purpose of trying to eliminate the factor of imagination. I tried to observe the action of the drug in several instances, and indulged in doses which should have produced exhilaration. I have known of two or three cases of nausea indirectly induced by the exercise of the drug upon them, but in the majority of cases, I am sure the toxic evidences that have been manifested were largely the result of my patients assuming that I was examining them with a view to ascertaining such toxic evidences. There is one point that should be borne in mind, and that is I distrust any solutions of whatever strength that have been kept in my office more than a couple of days, either winter or summer. I have little tablets of the drug which the druggist puts up for me. I have noticed, too, that when I give my patients cold water to wash the mouth out we oftentimes have considerable soreness of the tissues after using the drug ; and in one case that I at present recall, an abscess occurred. I now use warm water and do not find any bad effects.

Dr. I. A. Freeman of Chicago : I have had a limited experience with the use of this drug. I rise more particularly for the purpose of stating some things that have occurred to me in reference to its use. Mention has been made of nausea occurring. An instance was given me not many days ago of a physician administering about one grain of the drug for a prolonged and severe attack of vomiting, which resulted in a cure of the case. While this may not prove anything, it is yet helpful to a certain extent, in that it shows different results from its use. I had a physician administer the drug hypodermically for the purpose of preparing a root for crowning. The patient was subject to hysteria, and had been under this physician's care for a considerable length of time, consequently I desired to have the matter placed in his hands where it might be safe. We very soon had a case of labored breathing, a good deal of disturbance in the region of the heart—in short, the symptoms were quite alarming, lasting about twenty minutes, when the patient became free from any distressing manifestations.

I have used it very frequently for extracting, wedging, and other operations about the mouth. I feel that we have been highly favored by the researches that Dr. Pruyn has given in this direction. He has been an enthusiast for some time upon it, and has studied the subject with great care.

Dr. Atkinson of New York:—We have had a bad experience with the drug in the East, and those of you who have read the results of Dr. Mattison's experiments know that they have been adverse to a very heavy per cent. I have seen this hilarious intoxication from cocaine that has been referred to, and to say that infirmity follows its action would transcend my reading on the subject. There is a law in the application of remedies, and if we do not understand that law, we should wait, or ask counsel. It remains in the hands of experimenters, and what may be accomplished by it we do not at present know. The history of cocaine, used as an arrester of the waste metamorphosis of tissue in certain troubles, is open to small doubt. I am decidedly disposed to say, hands off!

Dr. William Conrad of St. Louis:—This paper has given me a great deal of pleasure. The use of cocaine has been in my opinion very much abused. I have operated with it in different conditions perhaps a hundred times, and have seen no very bad results from it, but I have seen some of the symptoms mentioned, and some that have given me a little trouble, but nothing that would alarm me. I have not used less than one-fourth of a grain hypodermically. I have used as much as a grain and a half. But I must say, gentlemen, that the more I use of it, and the more I hear intelligent men talk about its use, the more careful I become. There are certain cases we meet with in the practice of dentistry, where to do the necessary operation without some form of anæsthetic would be almost out of the question. Chloroform or ether, I think, are too potent remedies for what we might term trivial operations. The use of nitrous-oxide is out of the question, because its effects do not last long enough to give the operator time to operate safely. In such cases I would recommed the use of cocaine, mixed at the time of using, and the mixture I use is that recommended by Viau, of France. I had used it quite frequently without adding carbolic acid, as recommended by this gentleman, and my results were not satisfactory. With the use of the carbolic acid solution, I have had much satisfaction in removing deeply embedded teeth. In removing embedded wisdom teeth, in removing teeth where there is irregularity, it is almost impossible to reach them rapidly; in these cases I would suggest its use.

The essayist, in closing the discussion, said: My friend Dr. Martindale speaks of its decomposition; that keeping it in the office for a few days renders it unfit for use. He may avoid that by adding to his solution salicylic or carbolic acid, or any of the other antifermentative agents that are in use. I prefer salicylic acid, and very few grains of it will keep the solution for days. In some instances the solution will be good for months after the first use.

Dr. Freeman, while he is not a homœopath, alludes to the fact of cocaine being used for the control of vomiting. I am not a homeopathist, but still the fact of a remedy acting as it does shows that there may be something in it. I think, however, that there are many drugs besides cocaine that I would rather use to prevent vomiting.

There were a few points in the paper that, I think, were not made sufficiently clear to some of you, and one of them was in what cases would I refrain from using it. I should be inclined to prohibit its use in cases of heart trouble, whether it involves the valves of the heart or any other portion of the organ. If this remedy has such an effect upon the circulation and respiration, as some claim it does, we should refrain from using it. We should prohibit its use in cases of disease of the kidneys. I would not use it in the case of a pregnant woman. Dr. Atkinson says it is an unreliable drug; that it never acts just the same. While all drugs are uncertain as far as their therapeutical action is concerned, this drug seems to be more uncertain than any other with which I am acquainted. While we are using it with success, Dr. Atkinson urges us to be careful in its use. In handling it have at your hand all known remedies for resuscitation in case a toxic condition should develop. If you have children to deal with, the doses should be proportionate to their age, and I find I can get all the toxic effects I want from small doses carefully used. I find it a valuable remedy, but, like many other good things, it can be abused.

Dr. Templeton of Pittsburg: Have you ever used it in the case of very young children?

The essayist: I have used it in young children, and in most cases they bear it with greater tolerance in proportion to their age than older people.

The President than announced that clinics would commence at the Chicago College of Dental Surgery promptly at 9 o'clock, Wednesday morning, February 6.

On motion the society adjourned till 7:30 P. M.

EVENING SESSION.

The society re-convened at 7:30 P. M., and was called to order by the President.

Dr. J. J. R. Patrick of Belleville, Illinois, contributed a paper entitled:

THE STUDY OF PRE-HISTORIC REMAINS IN THEIR RELATION TO DENTISTRY.

Some fifty-nine years ago, under the direction of the Canal Commisioners of Illinois, James Thompson surveyed and platted the small town of Chicago; he was for many years afterward County Judge of Randolph County. At the time of the survey, the Pottawattamie Indians owned 20,000,000 acres of land in this region, including Cook County, which they ceded to the Government, and were moved west of the Mississippi. Many years prior to the permanent settlement of this region, by an English-speaking people, the shores of this lake were visited by the celebrated Frenchmen, Marquette, Joliet, Hennepin and LaSalle. When these pious pioneers, in 1673, visited the site of the now great city of Chicago, the Tamaroas and Pottawattamies roamed over this vast region undisturbed by the European.

If our rude predecessors could arise from their graves and revisit the theater of their earthly career, and see the country in its present condition, it is doubtful whether they would have sufficient intelligence to be surprised. The growth of large cities, packed with industrious people, occupying their abandoned lands; multitudes of domestic cattle, supplanting the wild herds of buffalo and deer; machinery resembling organic beings in delicacy of structure; the powers of matter applied to give motion to that machinery; speedy locomotion by land and water, supplanting the pack and the canoe; illumination and the transmission of intelligence—in short, the civilizations of the old world, transplanted in the new, taking deep root and making vigorous growth, are so far removed from the conceptions of the savages to whom I have alluded, that they could not be expected to look on such progress with intelligent wonder.

On the other hand, it can be said with equal truth that if the great mass of humanity that has supplanted the savage, presenting as they do all the outward appearance of civilization, were asked to explain the means by which they arrived at such a condition—the many sources from which they draw their wardrobe, or adornment, the many channels through which civilization furnishes their breakfast table—it is doubtful if they would have sufficient knowledge of the workings or the make-up of civilization to give an intelligent answer. The Indian, receiving his blanket from the Government, and the civilized man, receiving his garments from the hands of his tailor, are almost equally unconscious of the many processes through which the material passes in the course of manfacture.

This great progress has all been effected little by little, at times more rapidly than at others, but, viewing the whole course of civilization, it has been gradual, though moving with an accelerated ratio. The explanation of so rapid a progress is to be found in the constantly increasing division and subdivision of labor, building up the social fabric in the same manner that special cells compose and build up each part of a living organism; and it is a wise provision in nature that each division and subdivision in labor, each segmentation in the cellular formation of living organisms, is dependent on the other, and is the outgrowth from natural law. If we review the history of the sciences, we shall find that marked advance has been made in a given science only when it has been connected with the progress of some collateral science or art. Thus, the astronomer when connected with the optician, was capable of rapid progress. It was known for centuries that a piece of steel, rubbed against a piece of peculiar mineral, had the power of attracting iron; and amber, if rubbed, had the temporary power of attracting light substances; but these phenomena were only deemed exceptional.

Time finally brought the theorist and machinist together, and what are now the triumphs of magnetism and electricity? It would be out of place here, and treating of matters too familiar to my audience, to show how much we are indebted to the refinements of chemical analysis for our knowledge of the elementary constitution of the earthy salts that enter into the composition of the hard tissues of the body; or to the important facts revealed by the use of the microscope to the science of physiology, together with the creation of the science of animal morphology, brought about by investigations into the cellular structure of plants. It is very clear that if the practical man had no time at his disposal, and the theoretic one lacked that skill in manipulation requisite to give the appropriate degree of excellence to the material with which to experiment, advance in the proper direction would be for the time impeded.

The superiority of the civilized over the savage man is in proportion to the extent to which his thought can grasp the past and the future. His memory reaches further back; his capability of prediction reaches further forward, in proportion as his knowledge increases. He realizes that it is not altogether what he sees, but how he sees; he critically examines what he has seen, and recognizes the objects that are of importance. The senses, he has learned, are merely the substructure for the grandest systems of thought, and in their development must be subject to the action of the culture to which they give rise. In uncultivated minds, the senses are the teachers; but in cultivated minds they are led by the understanding. A weak, but disciplined, eye can see more objects than the strong but undisciplined one—for it discovers truth from so many sides, so necessary in scientific inquiry. In short, when the eye is controlled by the understanding, it is capable of distinguishing what is new and valuable from the hackneyed and worthless; it is never thrown out of focus by chimeras, but receives the impress of objects truthfully, or, if the eye is defective by nature, or enfeebled by age, the understanding corrects the error, or restores the enfeebled eye to usefulness.

There can be no question in regard to the division of labor being the main principle in the civilization of mankind, and that specialties in scientific pursuits have been the cause of their great advancement. But when specialties in scientific pursuits, or labor in the useful arts, become narrowed down or restricted to a few principles, they become subversive of mental exertion, and can not fail to produce disastrous results. Specialties in science must have a dependence upon universal knowledge to exist, for, as the earth is illuminated by celestial bodies by night and day, so any specialty, either in the arts or sciences, must constantly receive the light from other sciences and other arts to be in concert.

The practice of dentistry and surgery has a history as old as medicine, and medicine, as we all know, is as old as disease itself; but these professions remained for many centuries in a passive condition, until they received a progressive impulse from the mind of John Hunter. Blot out the original investigations and discoveries of this great laborer in the field of original research, and these three professions would be in the condition they were when he found them—largely in the hands of quacks and charlatans. Now, it is not altogether the work that Hunter performed himself, but the exact methods of investigation that he introduced, which gave a new and vigorous impetus to scientific research in every department.

From these considerations it is clear that a specialty, to be in the van of progress, must not only receive, but give, for in this consists the law of progress.

When we pass to the consideration of the rapid advance our own specialty has made of late years, we must attribute it largely to the growth of associations, for the advantages conferred by these societies are manifold; they enable those who are devoted to scientific research to combine, compare and check their observations, to assist, by the thoughts of several minds, the promotion of any inquiry undertaken. They afford a means of submitting to a competent tribunal, essays or memoirs, and of obtaining for their authors, or others, by means of the discussions that follow, information from those well-informed on the particular subject. They contribute from a joint purse to such efforts as their members deem most worthy, and defray the expense of printing and publishing such researches as are thought meritorious. Societies thus organized are co-operative in their character, and are a powerful means in the promotion of progress.

But a society composed exclusively of one profession, unfortunately, has a tendency to contract upon itself, to show undue respect for the authority of superficial collectors of information, and to follow blindly the work of others, without regard to verification. A society thus restricted in its methods will unconsciously foster an antipathy to the minute details of scientific research, and encourage methods of investigation that are generally diffusive in their character.

Now, there are questions brought before our societies, from time to time, for solution, that are treated in a diffusive manner, that could, and should be treated or investigated by more exact methods. I refer to those questions that involve the comparative frequency of diseases of the teeth of the savage and the civilized man.

Are there any influences connected with civilization that are productive of degeneracy of the dental system? Is civilization to be charged with the frequent anomalies to be met with in the civilized man? Is decay of the teeth peculiar to civilization? Now, it is very clear that these questions can not be answered intelligently, until the following question is answered: Are the dental systems of uncivilized races of men free from anomalies, and all those diseases and malformations of the oral cavity so common to the civilized?

If we refer these questions to the general practitioner of either medicine or dentistry, the answer will be that the savage is exempt from these diseases and malformations, and that civilized man, owing to his artificial mode of living, requires artificial methods to support his organism; that while his mental capacity has increased, it has been at the expense of his physical. When asked for proof of these statements, we are met with generalities; statistics sometimes are quoted, but only from the side of civilization. Now, seeing that the savage has no asylums to investigate, no physicians or dentists to interrogate, that we could recognize as reliable, and no statistics to question, the conclusions drawn are quite *natural*, and being natural, are one-sided and very savage, but certainly not scientific.

Had the question of civilization being the cause of tooth decay never been introduced for discussion, the practitioner of dentistry could have saved decayed teeth, and corrected deformities, without troubling himself about the condition of the mouth of the savage. Yea, he could have investigated the cause of disease, and irregularity of development, equally as well in the organism of the civilized man, without the least reference to the condition of the organism of the savage, and there is no doubt in my mind that if the savage had been allowed to rest in peace, so far as this question is concerned, there would have been more truly scientific workers in the field of inquiry as to the origin of diseases and malformations of the human mouth.

As the question now stands, the savage is an important factor in the inquiry, and if, upon investigation, it is found that he is not the physically perfect creature he has been represented to be, then this driftwood that has in all probability been drawn from tradition, or the archives of the imagination, and that has dammed up the stream of our professional progress, will be swept away to the gulf of oblivion. If this should be proven to be the case, there would be less opportunity for differences of opinion in regard to the condition of the teeth and jaws of the savage and the civilized; much valuable time would be saved in our society meetings in the discussion of dietary methods of reconstructing or rejuvenating the human teeth, and the time thus saved could be devoted to the subjects of digestion and assimilation, with a probability of more profit.

It is fortunate for the solution of this subject that the inquiry is restricted to the hard and least destructible portions of the body, as cicatrices or cysts, the result of lesions by disease during life, anomalies or decay may be readily recognized. And as the science of geology teaches the history of our globe during immense periods of time, revealing to the mind vestiges of animal and vegetable forms which have appeared and disappeared, leaving their fossil remains in successively deposited strata, forming an indelible history; so the remains of pre-historic men are, in point of certainty, for the consideration of the anomalies and diseases of his jaws and teeth, as true a guide as the fossils are to the geologist in reconstructing the history of the earth. A number of these records exist in our museums, while thousands lie buried in the soil, much as we find the remains of former life entombed in the strata of the earth.

If these remains are examined, the forms of the crowns of the teeth and their roots could be noted; whether the crowns carried supplemental or multiple tubercles; whether convergence or divergence of the roots prevailed; augmentation or *geantism*, in whole or part, and the relative volume; diminution, or *nanism* of the teeth; augmentation or diminution on one or both sides of the arches; malposition by crowding; malposition by transposition; displacement of permanent by deciduous teeth outside the arch, or in the vault of the palate; inclusion of teeth in the jaw; confusion and fusion; transversion and reversion; anteversion and retroversion in whole or part; lateral constriction of the arches; rotation of single teeth on their axes; rotation by imbrication; erosion, grooved, pitted, granular or crescentic; odontomes of cementum, of enamel, and diffused; supernumerary teeth fused to permanent, and their position; partial division of the crowns of teeth; asymetry of the arches; diastema, double or single; augmentation of the transverse diameter of the arches; atrophy of the jaws, right or left, and caries of the teeth—these are some of the diseases and anomalies of the teeth and jaws that civilized humanity is afflicted with.

It is impossible to know what might be revealed in a physiological and pathological point of view in regard to the dental system of pre-historic man, until his remains are examined and tabulated. I respectfully and earnestly invite cooperative investigation on the subject. It is one of great importance to the profession, which will grow in interest as the investigation progresses, while at the present time it remains in comparative obscurity.

DISCUSSION.

Before proceeding with the discussion on Dr. Patrick's paper the Chair announced that Dr. E. M. S. Fernandez of Chicago, would give a clinic February the sixth, at the College, in which he would demonstrate his method of filling with the oxyphosphates and oxychlorides.

Dr. E. T. Darby of Philadelphia, was selected to open the discussion, but was absent.

The Chair seeing Dr. H. J. McKellops, called upon him, who on rising, said: "Mr. President, I have nothing particular to say on this subject, but some years ago if you remember, I offered a resolution in the American Dental Association at Cincinnati, for the appropriation of money to investigate and tabulate the skulls in charge of the Surgeon General of the United States. There has not been a particle of work done in that matter. It stands to-day where it was then, and the reason the paper is read is to show the want of such investigations. There is a field for work in this direction, and what we need is to appropriate an amount sufficient to thoroughly investigate the subject.

Dr. Atkinson was called for. He said: I have only to commend the wisdom of the writer of the paper in taking the ground he did. It is unfortunate that we have had no investigations made on such an important and interesting subject. I agree with the essayist and Dr. McKellops' expression of the necessity of making all the observations possible within the available reach of scientific research.

The President, noticing that Dr. Darby had just entered the room, called upon him to participate in the discussion. Dr. Darby ascended the platform. He said: "Mr. President and Gentlemen, I am very sorry not to have been here on time as expected, but I accepted the invitation of a friend to dinner, hence am a little late. I do not know that I have anything valuable to say upon the subject under discussisn. I have always read with interest everything that Dr. Patrick has written upon the subject of dentistry. He kindly gave me his paper to look over, so that I might be prepared to say something on the subject. I must acknowledge I read it hastily, so that I did not get the full sense of the paper nor the work which he presented. But I infer from a casual glance at the paper that its object was more to encourage careful observation on the part of the profession in this work than anything else. It is true that we know something of the character of the teeth of the ancients, but we do not know how careful they were with them. The subject has been one to which I have given some considerable attention, and one which I am exceedingly interested in at present, because some of my studies at the present time have been in the direction or line of Dr. Patrick's paper.

Some years ago it was a pleasure to look personally into this matter of the teeth of the ancients. I not only read upon the subject very extensively, but gave it a good deal of thought and study. It has been said that the ancients suffered less, and perhaps not at all, from diseases of the teeth than we of to-day. We know, however, from the remains that have been found in the ancient tombs of Tuscany that they suffered from some of the conditions which we find at the present day. It is an old story, and a true one, that deterioration is following the centuries as we go onward in time, but that is not true in all parts. I should be sorry if men of the present day were not as robust, either physically, or as well-developed mentally, as centuries ago. My observations in the East, in Egypt, the Holy Land, and other places, wherever I had opportunities of examining the teeth of the ancients, were that they seemed to have been in better condition, though my observations were not extensive enough for me to speak authoritatively. I had unusual opportunities in Egypt for examining the teeth of the ancients at the time I was there; the mummy pits, which were then under the supervision of a Frenchman, who was locked up during the siege of Paris, offered a splendid opportunity for study. I went into these mummy pits, and dug them out with my hands, one after another, extracting the teeth of the ancient mummies as they had been embalmed, and carefully examining them, and with but a single exception did I find a tooth missing, and in only two exceptional instances did I find evidences of carious teeth. These mummies were placed in the pits no less than three or four thousand years ago, before there was evidence of this method of embalming—going back to the time of Abraham and the great Pyramid of Cheops. I also had opportunities of examining the teeth of the ancients at the Convent of Saint Katherine, at Mount Sinai, in the charnel house. Every monk that has died or dies has his skull and all his bones placed in this charnel house. I got permission of one of the monks to go into the charnel house and examine these skulls, but of course my examinations were not made with care—that is, they were not tabulated. I might say, also, that these skulls were arranged in the order of the centuries in which the monks died. I went through these tombs, examined a great many teeth, and with very few exceptions did I find decay; it was only in skulls dated three or four centuries back that I found decay to any considerable extent. So I was led to suppose, from my observations in the Egyptian mummy pits, that the teeth of the mummies in the various museums at that time or generation were vastly poorer than those of the ancient Egyptians. I found, also, that the teeth of the Egyptians of the present day were better than ours, and the Bedouins or Arabs of the Desert had vastly better teeth than those who lived in cities and subsisted on an entirely different kind of food, which consisted largely of the phosphates. I found that the Arabs lived mostly upon barley bread baked in the ashes, beans, etc. They rarely ever touched animal food. It was the rarest thing that these Arabs had anything to eat except the bread they baked in the ashes; and their teeth were, almost without exception, good.

I went, also, into the desert of Sahara, and found that the Saharans or Arabs of Sahara had poorer teeth than the Egyptians or Bedouins of Santiac, for they lived upon a food largely of an animal nature, and less upon those kinds of food which contain the phosphates. Yet all these data do not prove to us that the teeth of previous generations were so very much poorer than our own.

Dr. Thompson of Topeka called attention to the fact that some years ago he brought out the idea that the teeth of man were in process of suppression in the race, which attracted a great deal of attention; and to-day we know that the wisdom tooth is in process of suppression; no dentist would deny that. We know also that some of the other teeth sometimes disappear or fail to appear. He had listened with pleasure to the remarks of the previous speakers, and thought that investigations looking toward the accomplishment of the object in view should be carried out.

Dr. Sudduth of Philadelphia: I have never had opportunities of investigation in this direction, but it seems to me it is a shame that the dental profession should be satisfied with such a superficial view of this question. Much valuable time has been given to discussions on papers upon the influence of diet and civilization upon decay of the teeth without any just basis upon which to work. It appears to me that right here in Illinois where we have evidences in the pre-historic mounds, that the societies and dentists of this State should have taken more active steps than they have to investigate and tabulate data upon which to reason in regard to this work. The point brought out by Dr. Patrick was the necessity of special observation and tabulation in regard to the question under consideration. We ought to take hold of the subject, and enable some men capable of making these investigations to bring out a work that will be a credit to the dental profession. This point was brought out at a meeting of the Illinois State Dental Society at its meeting in Quincy some years ago, and a committee was appointed, but so far as I know it has died in the committee. I have never heard or read any report from it. What we need is reliable data upon which to base our observations. The more I attend dental meetings the more deeply I am impressed with the utilitarian aspect of American character, and as was said by Dr. Patrick, we want broad, comprehensive discussions on papers. We want specialties within specialties in order to get at the basal facts of these things. We can not expect to advance as a profession in original investigations on nothing; it takes time and money, and the men selected to carry out this work must be supported.

Dr. J. N. Crouse of Chicago: I want to defend myself in this matter. I believe I was the chairman of the committee alluded to. The matter was brought before the American Dental Association, at Cincinnati, with a view to getting the co-öperation of dentists all over the country, and somebody said there was a scheme in that to get ahead of somebody else, and that killed it.

Dr. Patrick, in closing the discussion, said: We want stubborn, irresistible facts that can be referred to. The evidence must come in before the verdict is rendered. The object of the paper was not to inform you how many decayed teeth there were in an Indian skull. I kept away from him. It is not my business to show you the benefits that may be derived from an investigation of this subject. As I stated particularly in my paper, the subject may have slipped your recognition, and that it is one-sided until it is investigated, and the Indian has come to stay. You cannot get rid of him. Just so long as a man can make an Indian a scape-goat to explain the disease of civilization, he will do it; he will never investigate them. That is the reason why I said the savage man ought not to be in the question; we would have got along better without him. The past history of dentistry is imperfect; so it is of medicine. Not until investigations are made of pre-historic remains and tabulated by one gentleman and another will we accomplish the desired result.

CARIES AND NECROSIS IN THEIR RELATION TO PRACTICAL DENTISTRY.

By J. H. MARTINDALE, M.D., D.D.S., Minneapolis, Minn.

In being permitted this evening to invite your attention to the subject suggested by your committee, "Caries and Necrosis of the Jaws and Alveolar Structures," I do so with knowledge that I shall be unable to present anything very new or valuable as to the etiology or management of these conditions which, although highly important, consist of a topical and systemic treatment which, for the last few years, has changed very little. I trust, however, that as long as the established truisms of medical science with respect to caries and necrosis are so comparatively little understood and practiced as at present, you will excuse me if my treatise presents very little of scientific hypothesis or surmise.

Before we can intelligently consider caries or necrosis as an affection of the jaws and alveolar structures, we must first consider it as affecting osseous tissues in general. In a pathological sense, diseases of the bones are identical with those of other tissues, while such differences as exist are due to their anatomical and physiological peculiarities, diseased action under all conditions being materially modified by texture. In the bones diseased action is thus modified by the presence of the inorganic material which they contain, two-thirds of their constituents being earthy and one-third animal.

This animal proportion of the texture of the bones includes a fibrous periosteal membrane with cellular tissue beneath; and in the long bones of an endosteum or inner periosteum, which lines their medullary canals. With this latter class of bones this paper has no concern, hence the subject of osteo-myelitis, or the "inflammation of the bone marrow," as Thomas Bryant designates it, although a subject of the most intense importance and interest to the general or orthopædic surgeon, will not be touched upon here.

Caries, or necrosis of the jaws and alveoli, always point to an antecedent condition of inflammation, although it by no means follows that inflammation of the jawbone has, as a necessary sequella, caries or necrosis of the same. As inflammation can only pertain to vital animal substances, the process of inflammation in bone can be found only in that organic vital plasma so inexplicably and mysteriously blended with minerals to form the bony tissues of the animal organism. In the jaws this substance is found in the periosteum, the bone cells, and the inosculating of their canaliculli, and in the circulatory system of the Haversian canals. With the tangled net-work of fact and hypothesis that at present constitutes our acquaintance with the subject of inflammation, it is unnecessary that I should here burden you. Let it suffice to say that when inflammation of this highly vascular periosteum has been induced in the maxillæ or alveola appendages thereof, by traumatism, septic infection, cachexia, or by specific mineral poisons, and proceeding through the successive stages of increase of blood to the part, multiplication of leucocytes and congestion, finally reaches complete stasis, so that nutrition from a definite and considerable area of bone is suddenly cut off, *necrosis* must then inevitably result. If, on the contrary, complete arrest or capillary infarction shall not have been reached, but the blood current has been slowed, and the interstitial portions of bone have become the seat of foreign elements and the scene of perverted nutrition, we reach the stage so admirably described by Dr. Ingersoll, whom I now quote.

Speaking of the transudation occurring in congestion, he says: "Red corpuscles follow the white, but not in such large numbers. Stagnant blood in which the corpuscles are dead also passes out. From the damage done to the vascular tissue, and to the contiguous cellular tissue, there is a debris left to mingle in the flood of disorganized material which constitutes pus. In addition to the matter which is the result of the disorganization of tissue, there is, according to modern discoveries, a large emigration from without, in form of micro-organisms of various types, considered to be exopathic causes in the formative processes of developing pus." Professor Dalton, in his physiology, tells us that this intercellular or interstitial area which we see by Dr. Ingersoll's apt description has now become the field of such strained conditions and anomalous elements, in the *normal* state of circulation is filled with interstitial fluid, which is the source of nutriment for the solid parts surrounding it, and is renewed by constant change. As fresh supplies are drawn from the circulating blood, the older portions are removed by absorption and returned to the center of circulation by the lymphatic vessels. Now, if the condition described has been reached, we find that the interstitial area of bone so affected presents a very chaotic mixture, embryonic cells, blood corpuscles, dead blood cells, and the debris of the tissue involved in the inflammation. We have present as you see *re*-constructive and *de*structive elements we are viewing the ultimate battle ground of tissues. In proportion now to the *natural vital force*, of the human subject in whom these changes are taking place, and his predispositions of cachexia, we view either the wonderful upbuilding of molecular form of new tissues, or tissue death, molecule by molecule being cast off with pus in the form of dead bone-earth; this we call *caries* of bone. If I succeed to any degree in differentiating the causes and progress of caries and necrosis, it is perhaps the most valuable purpose this paper could possibly subserve. The terms, as I know, are too often used by dentists interchangeably and with very loose conceptions of what really constitute their respective distinctions. No doubt necrosed areas of bone are often found in connection with caries, and as a result of the progress of that disease, having insulated as it were small territories of bone, and by thus cutting off their blood supply causing necrosis. According to the definitions in the books *necrosis* is a condition analagous to gangrene, or slough in the soft parts, and *caries* is described as a condition of the bones similar to that of ulcerations in the soft parts, with the exception that the disintegrated bone-tissue contains bone earth, and this debris acts as an irritant in the tissues, exciting the florid granulations which grow so plentifully from the surface of a sore, or fistula over a portion of carious bone. Caries presents a spectacle similar to that of a well-contested battle-ground where life and death are closely contiguous. Here a molecule yields, dies, and is carried off in the torrent of pus and death waste, and right beside it is a healthy molecule waging valiant defense against the usurper. In necrosis, to the contrary, the defending forces, represented in bone as we have previously stated by the lacunæ, their canaliculi, and the Haversian system of vessels, find themselves like besieged soldiers in a barracks sorely oppressed by the enemy, their sources of nourishment from without having been commpletely cut off; they surrender the barracks en masse, and leave it dead and tenantless—a mere mass of mineral matter like the coral in the museum, once the abiding place of animal life, now an empty skeleton."

Holmes says in his system of surgery, "When a portion of bone is to die, the first phenomenon is the cessation of circulation in it. This leaves it hard, white, and sonorous when struck. It does not bleed when exposed or cut into, and is insensible." It is very frequently the case, that the periosteum immediately covering the area of bone thus necrosed is lifted up by an effusion of inflammatory products, but instead of dying, its bone producing cells being irritated to an excessive activity, proliferate a film of bone which encloses or invaginates the dead bone, requiring that we should cut and penetrate this new bone e'er we remove that which is dead beneath it. In the lower jaw also, which as you know consists of an outer and an inner plate, which are of very dense and compact osseous tissue, enclosing a cancellous portion, these plates, especially the external plate, are bulged out by the inflammatory effusions beneath, forming a tumor appearance which when pressed will frequently be found to be so thin that it will very readily yield beneath the finger — I, in my practice, very frequently find this condition presenting as a result of acute inflammations of the bone resulting in effusion. Later on if resolution does not occur said effusions will form for themselves an outlet and this bulged out plate of bone will collapse. In other instances the effusions being capable of organization into new products, the cavity becomes filled with dense bone, and a permanent bony tumor is the result. Having attempted thus far to trace pathologically the progress and nature of these diseases as presented in the maxillary bones, let us now enquire into some of those blood taints or cachexia which especially predispose to, or directly cause Necrosis and Caries — among them are the exanthematous diseases common especially to childhood (measles, scarlet fever, chicken pox, etc). In them exfoliation of a considerable portion of the alveolar process involving the deciduous teeth therein contained, and even the follicles of the permanent ones is by no means uncommon; especially does it follow measles, commencing subsequently to the active stage of the disease, in tenderness of the gums, fetid breath, but no severe inflammatory action, the gums recede from the teeth, and bare bone is exposed, this exfoliates, and leaves a gap in the jaw, which is gradually filled up with new bone. Of late years the attention of the writer is being more and more called to the prevalence of caries and necrosis as a result of inflammation aroused by traumatism, or other means, in the bones of scrofulous persons, or those of tubercular diathesis. In such cases modern authorities tell us, the cell proliferation which is the natural consequence of the inflammation resulting from a contusion of the tissues, in place of quickly taking on a reparative action, has a tendency to hyperplasia reverting to embryonic conditions and so to a nesting or bunching of cells such as is often met with in the medulla of bone in tubercular affections of the osseous system; the reversions to an embryonic type, are *apparent* only, as these cells are doomed in the majority of cases to death and degeneration. Cases of this kind have several times presented themselves in my practice, and later on I shall quote some of them in detail from my case book.

Constitutional syphilis is a predisposing condition to necrosis, and such a case as that cited by Sir Christopher Heath, in his work on "Diseases of the Jaws," where a dentist had suit brought against him for a case of necrosis, ensuing as the result of an extraction of a tooth, the patient being a syphilite, is not uncommon. A large number of the cases, however, which are usually ascribed to syphilis probably are induced by the great amount of mercury and iodide of potassium, which are the drugs so extensively used in its treatment. No inconsiderable number of diseased skulls and other bones to be found in our museums, exhibit the results of mercurial poisoning. Mahomedans and Hindoos, in various parts of Hindostan, believe that mercury is a specific for fever and for that purpose it is given in a most reckless manner, with the result of inducing extensive necrosis of the skull and other bones. Especially when used so freely as is even now in our own country so common by inunction, we may not infrequently witness symptoms simulating those of secondary syphilis, but which are really due to excessive mercurialization of the system.

The writer himself has a patient who assures him that when a few years ago at the Hot Springs he was treated most heroically for syphilis by inunction; he could frequently discover little globules of free mercury in the creases in the palms of his hands, and coins carried in his pockets at that time were silvered over with a mercuric amalgam.

McNamara, in his work upon the bones, states that mercury has been found in its free metalic state in the bones, and thinks that by blocking up the small vessels and canals of the osseous tissues, it so interferes with the circulation of a part as to result in death of the bone. Necrosis of the alveolus during the administration of mercury, however, may occur from a different cause, depending upon the condition of the gums through which the supply of blood to the bone is largely supplied. If profuse salivation exists, the ulcerating and sloughing condition of the gums must largely interfere with the flow of blood to the alveoli of both upper and lower jaws; and so the occurrence of necrosis of bone in this locality is explained precisely as we see in cases of cancrum oris. Another mineral poison with specific tendencies to effect necrosis of the jaws is phosphorus, the fumes of which inhaled by workmen in match factories, induce the most extensive necrosis, the remarkable feature being that through some peculiar affinity existing between the poison and tooth pulps exposed by decay, the workmen are said to breathe the phosphorus fumes with comparative immunity as relates to necrosis if only their teeth are free from decay or kept properly filled. But of the foregoing disease, as it is of very infrequent occurrence in this part of the country, we shall treat no further in this paper.

We come now to the causes most prolific of caries and necrosis in the jaws, and alveolus, especially as encountered in dental practice, namely, traumatism—blows, kicks, bruises and the like, which are frequent causes, especially when occurring in individuals of scrofulous or strumous habit. A great many, undoubtedly the larger number, of diseased conditions of the maxillæ originate in diseases of the teeth or their sockets, and in ill-advised or careless dental operations. Among the former may be enumerated dead tooth pulps, encysted teeth, and delayed eruption of the wisdom teeth. And among the latter, heavy malleting, roots improperly filled and roots filled with improper filling (as cotton unimpregnated with any preservative medicine).

The writer has also frequently had occasion to note (once he regrets to say in his own early practice), *necrosis* (never caries), as a result of the application of arsenious acid for the purpose of effecting devitalization of the dental pulp, said application having been insufficiently well sealed from the fluids of the mouth. To the relief of the dental surgeon be it stated that eminent authorities unite in saying, (and the writer's observation in practice also persuade him to the belief), that in addition to the cases of diseased maxillæ, the unquestioned result of cachexia, exanthemata, mineral poisons and traumatism, many cases occur which are without doubt idiopathic.

Emphasis is placed upon this fact, in consequence of the too frequent reproach cast upon skilled and discreet dental surgeons, that their ill-advised or rough operations have induced the disease. The writer maintains that in certain cases the tissues adjacent to the field of dental operations, are in a condition peculiarly ready to take on an inflammation, which becoming an ostitis, then breaks down (in the manner described in the first part of this paper) into a veritable necrosis or caries. It should therefore be continually borne in mind that in many cases, which we are powerless to foresee, improper treatment of pulp canals, or improper filling, excessive or violent wedging, heavy malleting, and the like, may induce caries or necrosis.

Diagnosis.—In the outset, the indications that precede necrosis and caries, are not to be distinguished from maxillary or alveolar periostitis, and it is at *this* period that the timely and heroic use of the bistoury, cutting freely through the tissues down to the bone will often avert further disease—but *progressing*, instead of confining itself to local or circumscribed swelling, the gums become congested and swollen over a considerable area, and pus oozes from the margins of the gums, the teeth become loose, and in a few weeks the alveolus or maxillary plates also become disintegrated by a carious process; or necrosing, they lie dead and sequestrated, bathed in pus. Pain is common in the early part of the disease, and is usually supposed to be tooth-ache; the patient's health often suffers greatly, symptoms of septicæmia, high temperature, sweats, rigors, etc., being frequently present.

Treatment.—All loose roots that cannot be made useful by the attachment to them of artificial crowns should be extracted. If, upon careful examination with a probe, we find that the bone is not diseased very extensively, that is, if caries has not extended further than the immediate surrounding of the roots of one or two teeth, absorption and extrusion of dead bone may usually be effected by the use of sulphuric acid brought directly in contact with the area of diseased bone. The preparation of the acid that I prefer is that known as the "Aromatic Sulphuric Acid" (a thirteen and a half per cent solution of the sulphuric acid of commerce, together with the aromatic principles of various spices). My method of using it is to inject it through the fistulous opening and directly in contact with the diseased bone by means of a hypodermic syringe, provided with a blunt ended needle, keeping it there for several minutes. I commence with a strength of about 70 per cent solution of the acid, and soon increase it to full strength. This treatment, conjoined with the use of injections of the peroxide of hydrogen, the patient's health at the same time being toned up with tonics, and the bowels being kept freely opened by the use of saline waters and aperients, will often effectually remedy the trouble. But in some instances the diseased bone is not gradually consumed and cast off, but either large sequestra are exfoliated, needing surgical assistance in their removal, or a considerable area of honeycombed carious bone is formed, needing removal by other means than by the dissolving properties of the acid. My treatment of such conditions will be set forth more in detail in the recital of a few cases from my own practice. It should be remembered, as formerly stated in this paper, that the termination of a periostitis in a carious or necrotic condition may often be averted if commenced early enough by freely and deeply scarifying the gums, use of saline cathartics, rest, attention to diet, tonics, etc.

CASES.

Case 1. In February of 1882, a young boy of 19 years of age was brought to me by his father for a condition of fixation of the jaw, accompanied by a large swelling of the right cheek and enlargement of the lymphatics in the cervical and sub-maxillary region. The circumstance of extensive cicatrices upon the face, resulting in consequent contraction of the facial muscles and distorted features, immediately induced me to ask of his father the cause, and I was informed that the boy was effected seriously with scrofula, and that these were the result of several running sores on the face.

As the abscess (for such it was) upon his face was already pointed, and I could not reach it in the mouth to void its contents there, I lanced externally and very fetid, greenish-yellow pus was copiously poured forth. Upon closely examining this pus I found therein contained small spiculæ of bone, and upon exploring the abcess tract with a silver probe, I was easily able to discern the presence of an opening in the inferior maxillary bone, just anterior to its junction with the ascending ramus. There seemed to be no large sequestra of bone detected by the probe, but rather a honeycombed or porous feel to the walls of the sinus. The abscess cavity was very thoroughly irrigated with carbolized water, and the boy was sent home with instructions to take a tonic of iron and quinia and good nutritious food, and return in two days. It should be remarked that the patient had been having high evening temperatures for several days, and his general condition was much run down by pus absorption.

Upon his appearance at my office in two days, I found my patient with the abscess still discharging (I had placed a seton in the opening), but the enlarged condition of his face very much decreased. I was now able, by the aid of a wedge and anæsthesia, to get his mouth open, and the evidence of the origin of his trouble (combined with the scrofulous cachexia) was soon evident; a late and difficult erupting wisdom tooth. Said tooth was lodged, with its masticating surface presented, in apposition to the posterior approximal surface of the second molar in front of it, and only one cusp emerging above the gums, which were very turgid and inflamed. With a physic forceps I managed to extract the offending tooth, and was then able to run my probe into the socket, and from there to the diseased tract in the maxillary bone, and so on out through the opening in the face which I had previously made.

I now had what I wanted, through drainage, and it was easy for me to inject my carbolized or other antiseptic fluids (we had not then peroxide of hydrogen at our command), through the whole diseased tract. My treatment now was a thorough scraping of the walls of the tract, with a dull scraping instrument, thorough and frequent irrigation with antiseptic washes, and a tonic treatment of the system with good food, iron, wine and quinia. After five or six days, the pus ceased to run, and in three or four days more the external wound was allowed to heal. The boy's health was renewed and the case dismissed.

Case II. I was called by a dentist, Dr. X., to see a case that had developed an undoubted carious or necrotic character. The patient was a lady aged about thirty-five years, and reported herself as possessing usually good health. Upon examination of her mouth it was seen that pus was escaping copiously from the gums surrounding the superior left central, lateral canine and first bicuspid. This condition had supervened not very long after the insertion of a not very large approximal filling in the lateral, but the circumstances were not of such a character as to suggest the probability of the filling being the direct cause, but seemed to point rather to its being one of those previously alluded to in this paper, whose origin can be ascribed to no direct source. For five or six weeks she had been subjected to the customary proper treatment with the sulphuric acid, the disease seeming not to abate, but rather to grow worse. The patient's health, also, had begun to suffer materially, her temperature running to 104, and she was generally weak and run down. Acid treatment having failed, it was a question as to what should next be done. Upon examining the parts with a probe, it was easy to determine the presence of much diseased bone and several detached pieces. The central, lateral and canine were so loose that it seemed as though it would be easy to remove them with the fingers, while the first bicuspid had begun to be seriously affected. After careful examination it was deemed best to operate for removal of the dead bone, which was done as follows:

The patient anæsthetized, holes were drilled into the pulp cavities from the lingual aspects of the central, lateral and cuspid teeth, all of which were found to contain dead pulps. Then a splint which we had made of vulcanite was placed in the mouth, and to this the central, lateral and cuspid were securely ligated. This was to prevent the dropping out of these teeth during the operation, which would otherwise undoubtedly have occurred. I then made a linear incision about an inch and a half in length, parallel with the margin of the gum, and about one-half of an inch above the margin. In then passing down into the gum, the alveolus was found to be entirely dead, some of it absorbed and carried off with the pus, and a number of the dead pieces were lying detached in the wound. These were removed with gouges, chisels and spicula forceps. We found as we went on a considerable portion of the anterior external face of the maxillary bone was involved. When the bone had all been removed, it was found that we had a space presenting an aperture about an inch long, and three-fourths of an inch high, and perhaps nearly an inch deep. It extended posteriorly to the antrum, and in front to the median line. The palatal surface or floor of our cavity was all devoid of bone, and naught remained there for quite a space save a mucous membrane partition separating it from the mouth. In one place the cavity opened into the nasal fossa, about an inch back from the nostril. The roots of the lateral and cuspid teeth projected entirely bare of any bony investment into this cavity, as also did the apices and sides of the bicuspid and central. During our operation the cuspid came out entirely, and although we began to think that it was a very forlorn chance to save any or all of the teeth, we tied it back in its place.

Every step in the operation, it should be noticed, was done under constant irrigation with bichloride of mercury solution, and all the probes and instruments were thoroughly immersed in this antiseptic wash before and during use. We now plugged up the opening with iodoform gauze. The next day considerable swelling of the face was found, but otherwise everything seemed favorable.

Upon removing the dressing we found, to our satisfaction, not a trace of pus, but healthy lymph, and every evidence of a healthy wound. To be brief, I will say that from the day of the operation we saw no pus; about every three days we removed the dressing, we found the reparative process going on splendidly from the bottom; soon the opening into the nares closed, bone formed around all the teeth, and at the end of about six weeks from the time of the operation, osseous tissue had been formed around the roots of all the teeth. The patient's general health began to mend from the time of three or four days after the operation. The next and last case with which I shall burden you is one of very frequent occurrence in our practice; not usually very dangerous to the general health, it is none the less often attended with very considerable loss of alveolar substance and loosening of the teeth. The disease is sometimes very obstinate in yielding to local medication, or to the use of aromatic sulphuric acid, but by simple surgical removal of the diseased bone it will almost always cease. To illustrate, I will select at random from a number of similar cases in my practice.

Case 3. Miss M— applied to me to relieve her of a discharge issuing from a fistulous opening in the gums, between the superior left lateral incisor and cuspid. She reported the discharge to have existed almost continuously for over a year. Upon examination of the lateral, which was filled upon its mesial surface with gold, I easily discovered it to contain a dead pulp. I immediately drilled a hole through the lingual aspect of the tooth, and, upon entering the pulp cavity, found it to be filled with a fluffy substance, which upon removal, was found to be a mass of cotton wool, which the patient said had been placed there about two years ago by a dentist who had filled the tooth. I then, after as thoroughly cleansing the pulp canal as possible, filled the said canal with a dressing of floss silk and iodoform, and dismissed my patient for a week. When next she came I removed the iodoform dressing, thoroughly washed out the canal, and entirely filled it with oxychloride of zinc. I then took a probe, and passing it down through the fistulous opening was able, easily, to discern the presence of soft, dead bone, which I proceeded to remove with a bur in the dental engine; however, to reduce pain and diminish hœmorrhage, I injected as deeply as I could penetrate with a blunt hypodermic needle into the fistula, about eight minims of a four per cent aqueous solution of hydrochlate of cocaine. I then proceeded in two or three minutes to remove with the bur the dead bone, which

I could easily detect by its feel, and entered a cyst or enclosure, about the size of a small marble, to which the fistula led. The sides of this I thoroguly scraped until I was sure the walls were composed entirely of live bone, and also burred off the apex of the root of the lateral incisor which was projecting into the wound. I then very thoroughly washed out the cavity with carbolized water, and after inserting in the orifice of the wound a tent of antiseptic cotton I dismissed the patient, who said she had suffered during the operation no pain. The next day I found some pus, and injecting freely with hydrogen peroxide directed her to use it herself three times a day. She did so; in three or four days the pus ceased to flow, granulations of new tissues began to appear, and in about four weeks the orifice healed up, and since then has shown no disposition to recur. I would say that I have purposely selected cases from my case-book, occurring and operated upon five, six, and seven years ago, since I have been enabled for years, and up to the present writing, to watch said cases, and can certify that there has been in them no recurrence of disease. The last one, that of the alveolar abscess with cyst, and fistula, is selected at random as a type which is constantly presenting itself in your essayist's practice, and being treated by him substantially in the manner described, yielding in the great majority of instances satisfactory results. In brief, my efforts are directed by every justifiable surgical or mechanical means, in *caries* toward changing a chronic ulcerating condition of the bone, progessive, and non-healing in its character, into a healthy wound, presenting features of acute inflammation and capable under skillful, and judicious treatment of casting out new products, and repairing waste of tissue. I have found it expedient in latter years to abandon the dental engine as a means of burring out carious bone, as I have found by experience I can follow more closely and safely and feel more delicately and surely my way, with a system of gouges, chisels and scoops which I possess. In closing this essay, which your indulgence has permitted me to present, I would mention with thanks the assistance which I have received from works on kindred subjects by Christopher Heath, McNamara, T. Bryant, Holmes and our most worthy confrères Drs. L. C. Ingersoll and G. V. Black.

DISCUSSION.

Dr. W. H. Atkinson of New York, in opening the discussion, said: "I labor under some difficulty as to how to express myself in justice and truth in portraying the manner in which the reading of that paper has affected my mind. If some one had read it in a foreign land and said that Atkinson did it, I should not be surprised, for there are so few points in it that I can deny. I have never heard an approach to the comprehension, diagnosis and treatment of such cases so nearly like my own as this presents, and I can not find fault with anything respecting it, excepting that it might be considered a little technical.

Just at the close of the delineation of his last case, reference was made to the reparative process, which he denominated inflammatory—now I deny that the reparative process is ever inflammatory—that it has ever arisen to the status of deterioration of the nutrient action of the tissues to be entitled to that word, or else it has been restored by retrograde metamorphosis and has assumed the condition of embryonal structure, or what is called granulation tissue, by men who are scientifically up in this matter, and yet they do not sufficiently define what they mean by granulation tissue, either macroscopically or microscopically, for us to understand them.

As to the manner in which we shall get rid of either carious or necrosed portions of bone, that should be left to any man as intelligent as the writer of the paper has proved himself to be. We can not lay down rules by which manipulations shall be made upon the living economy; there must be some intelligence and honor in the individual to enable him to be at liberty on the subject, or he is not fit to touch the case at all. This bears upon a subject that I have been interested in for many years, and am now working at it to the best of my ability, that is, dealing with the subject of retrogression of the tissues when pus is present. I will not attempt to denominate the processes through which retrograde metamorphosis, under the stress of inflammation, passes. When the tissues have been swollen, congested, and melted down until the granules of the embryonic structure are separated from each other, remaining with a few, perhaps, connective tissue cells or protoplasmic strings, or are entirely separate, that is pus. It is never green; it is never offensive; it is never reparative as far as corpuscles are concerned. The fluid contained within the abscess cavity or chasm of the deteriorated tissue, is capable of generating a rather poor sample of reproductive tissue. When retrograde action shall have gone far enough to have not only dissolved all the protoplasmic strings in this reduced tissue, leaving the granules, improperly called leucocytes by writers on this subject—when the metamorphosis, I say, shall have gone into the melting process, one step before the reparative process you get something worse than dead corpuscles. They are not entirely dead yet; they proliferate and segmentate into a mulberry mass after that, and do not build up the tissues. We get sanies after this process of retrogression has gone further on, developing a virulence by the so-called chemical action within the remaining connective tissue involved in the territory, constituting capillaries, arterioles, venoles, and the white corpuscles of the connective tissue. In these cases the abscess is not only composed of pus, but of sanies and ichor, a greenish tinge or bluish streaks being noticeable.

Dr. T. W. Brophy of Chicago: I am very glad that Dr. Martindale came here and read this paper, for he has very clearly drawn the line between that which is generally denominated alveolar abscess, and that which is termed caries (although incipient) of the maxillary bone. He has gone still further; he has discussed the subject of necrosis, simply the death of bone a little different in form. If I have ever felt the pulse of the dental profession and ascertained the condition of it in this respect, I feel that I have learned that there is not that importance given to this subject of incipient maxillary caries that there should be. We find oftentimes that cases coming into our hands which have been treated months and months for the cure of alveolar abscess without success, are simply cases of caries where the bone is in process of disintegration, and which will not be restored to a normal condition without resorting to different procedures. For example, the last case cited by the doctor where the septum had been destroyed by a slow process of disease, and where the next teeth as well as the entire surface had lost the bony structure in the beginning. Probably in this case he had a simple fistula, which continued to increase in size until the gum-tissue sloughed away and beneath it was the diseased bone.

While I do not desire to enter into a discussion of the pathology of caries and necrosis of the maxillary bones, I want to state to you some of the methods that I adopt in the treatment of these cases. I will speak first of caries, which is an ulceration of bone or molecular destruction. We have here, for example, a territory of softened bone at the apex of a tooth, the pulp of which is dead, and which has its origin from an alveolar abscess; the usual treatment of that abscess is to open into the tooth, make applications, if it is not a fistula, and expect nature to effect a cure. It does not do it, and why? Because the disease has gone beyond the tooth; it is a disease of the territory beyond, so we resort to some surgical methods for the purpose of effecting a cure. What are these? The method that has been delineated by Dr. Martindale, and indorsed by Dr. Atkinson, and which I believe was first introduced by Dr. Pollock of St. Bartholomew's Hospital of London, has already been explained. But this method of procedure is sometimes not sufficiently rapid. We are not able to control our patients for a sufficient length of time to effect a cure by it, consequently we must resort to surgical interference, and that has been described. What I have to say in reference to that, is simply a little in addition to what has been said. I indorse the methods that have been described by Dr. Martindale. I want to make this statement: he says he has discarded the surgical engine; I have not. In a case where the caries is not very extensive I would make an incision, expose the diseased parts, and, if need be, I would at once pack them with iodoform gauze, or what I think is better the boracic acid gauze, thus getting its antiseptic effect and obviating the disagreeable odor that comes from iodoform. Pack it and dismiss the patient for a day, and on his return remove the packing, make an ocular examination of the parts so as to see exactly what we have, to see how far the disease has gone, whether it has involved several roots or one root of the tooth, then we know how far to proceed intelligently with our operations. It is true the sense of touch may enable us to determine whether the bone is softened; we may without the aid of vision be able to make the proper surgical operation, and not go beyond the territory involved by the disease. The former method of procedure is better. We take a long sharp bur, passing it into the osseous cavity, excising the ends of the roots of the tooth. Why should we cut these off? Simply because they stand up there and do not serve any useful purpose, and are often a source of irritation; they interfere with the formation of new tissue, consequently it will be far better to dispose of them. Having done this, we cleanse the cavity, and pack it as before directed. I prefer the crystals of boracic acid in these cavities, because they dissove more slowly than pulverized acid; they are more constant in their action — in other words, we retain the antiseptic agent longer by using these crystals which dissolve more slowly than any other agent. Having packed the wound with some antiseptic gauze, a few days later we make another ocular examination, and if we see little red eyes (granulations) shooting up here and there over the surface of the part, it will soon be well, for we know that that is an effort on the part of nature to close the cavity and effect a cure. Then what I deem far better than any fabric for the closure of the wound or part is wax, which may be softened and moulded to the cavity; remove the excess upon the surface, and then replace. Why do we do this? Because a wax plug is better than a fabric plug for the reason that it is not capable of absorbing moisture, and it is more cleanly. It doesn't take up any secretions and excite further irritation. We may from time to time remove the inner surface of the plug, relieve it after a little time, so that granulation may go on; then by and by the cavity will he filled to an extent which will prevent the retention of the plug longer. This plug must be kept there so as to prevent closure of the wound. If the orifice of the wound closes, the secretions will be retained within the cavity, and trouble will ensue.

A word about the extreme cases, where necrosis has occurred and the roots of soft teeth have become exposed—in short, where the entire alveolar processes have been destroyed and the teeth retained. Our friend, Dr. Atkinson, says he would not have believed that years ago. I have had a number of cases where all the alveolar process was gone, and by careful retention of the teeth by splints held them there and secured a new formation, which was sufficiently strong to retain the teeth in place and make them serve the purpose for which they were made.

FEBRUARY 6TH—SECOND DAY—AFTERNOON SESSION.

The Society was called to order by the President, promptly at 3 P. M.

ANTISEPTICS.*

BY G. V. BLACK, M.D., D.D.S., CHICAGO, ILL.

It will be the object of this paper to give in some detail the results of experiments undertaken for the determination of the value of the essential oils as antiseptics. In the progress of the experimentation, however. it was found desirable to include a number of the more popular antiseptics by way of comparison, and these will be reported with the others, both for the information they give and for the better understanding of the relative value of the limited number of essential oils thus far studied. But in addition I shall devote some time to the consideration of the forms and modes of the use of antiseptics.

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*The experiments reported in this paper were begun under the auspices of the Odontological Society of Chicago.

For some years past the use of the essential oils as antiseptics has been gaining favor. But in looking up the literature of the subiect I have been impressed with the lack of exact knowledge of their value. It is a fact worthy of notice that some of the reputed antiseptics in use are not such as should be relied upon in surgical procedures, nor in the treatment of suppurative affections. The most notable case is that of iodoform, which has been so widely used as to form one of the supposed necessaries of the surgeon's case, and is yet without antiseptic value. Although this has been repeatedly pointed out, both by expert clinical observers and by experimentalists, I am sorry to say that it is still widely used for this purpose. Whatever may be the therapeutic value of iodoform, it is certain that in any solution that can be made in water or broth, it is in no sense an antiseptic and should not be used with this end in view. It is with the hope that it may in some measure serve for the prevention of such mistakes in the future that these experiments have been undertaken.

In doing such a mass of experimentation as I have now to offer you in the time I have been able to catch of evenings after busy days, I would be fortunate indeed if I should be found by those who may follow me, to have been entirely free from error, though I have made every effort at correctness. I have carefully repeated the observations upon those substances that have seemed useful for the purpose of eliminating all sources of mistake.

I wish to be understood as to the use of the word antiseptic. We are so unfortunate as to use, in connection with the therapy of micro-organisms, some words in a very loose way. Such is the case with the words antiseptic and disinfectant. Now, in my use of the word antiseptic I wish it distinctly understood that I do not mean disinfectant. An antiseptic is a drug that *inhibits the growth* of microbes. A disinfectant is a drug that *destroys* microbes. The same drug may be both antiseptic and disinfectant, but for these different purposes they would be used differently and in different proportions. As a general rule we are unable to use disinfectants, as such, in medicine and surgery, for the reason that the very poisonous properties of such medicaments would do more harm than their disinfectant property would do good. Dentists may use such in the roots of teeth with good effect, and in some favorable positions they may be used in contact with the soft tissues, as in very small abscesses. But for the most part we must be content with the milder remedies, and rely still more on aseptic procedures.

In the study of the essential oils very great difficulties have been encountered. In the first place the quality of the individual oils is uncertain. These are compound bodies that are probably liable to fluctuation in quality, dependent on the condition of the plant used, even when carefully prepared. Furthermore, the conditions of their production are such, with a large number of the oils, that the preparation must be undertaken where the plant grows, by persons of no scientific knowledge of the subject. This being the case, it often happens that the most desirable parts of the plant are mixed with undesirable parts, or even parts that injure the product seriously. For instance, the leaves of a certain tree yield a certain oil, and the bark another oil of different quality. Now, if the person distilling the oil throws in twigs with the leaves, the oils will be mixed and uncertain in quality. Besides this, there is much perplexity arising from their adulteration. Taking these facts into consideration, I can say no more than that the specimens of the oils that I have had, have yielded such and such results. The same oil in name may be different in the next specimen. I think, however, that it may be stated that, as a certain drug becomes valued in a pure state, tradesmen will readily be found who will furnish it in that condition. In the uses to which the essential oils have been put in the past, strict purity has not been of serious consequence.

Mode used in testing the antiseptic value of the oils.—The modes I have used in the exeriments which I will report are of consequence to any one who may wish to test the correctness of my findings. Furthermore, it is of consequence that these be closely scanned by the profession as to the correctness of the procedures by which the results have been attained. I will, therefore, give them very briefly, but in sufficient detail to enable persons of reasonable skill in this kind of experimentation to follow me, or judge of the value of my findings.

In all of my work an incubating oven with a well-adjusted thermostat for the automatic regulation of the temperature has been used. The temperature was kept at ninety-nine degrees Fahr. I have used beef broth peptonized and sweetened, and then carefully neutralized. Much care has been used that this should be even in quality in all of the experiments, so that the proportional representation of the values of the different medicaments should not be seriously marred by variations in the sustaining power of the culture medium. This is one point that has, I fear, not received sufficient attention from some who have tried this class of experimentation; and indeed it is a point of no little difficulty. The infection of the broth has always been made with my own saliva direct, under as near analogous conditions as possible; thus avoiding the use of micro-organisms that may have been weakened in vigor by cultivation under artificial conditions. They have therefore been with mixed growths which gives more severe tests than isolated varieties. The tubes used have been graduated to insure certainty in measurements of the broth, while very finely graduated pipettes have been used for the addition of the medicaments. In all cases control tubes have been used as a guide to the value of the plant. Each observation has extended over a period of five days, unless growth of microbes has been demonstrated earlier. And, what is no less important, notes of everything deemed of value have been written when observed. Nothing has been left to the memory. In some classes of experiments notes have been made each twelve hours, in the others each twenty-four hours. It has been my aim to so thoroughly systematize the work as to make the conditions of each of the experiments equal, as nearly as possible, except where these conditions were purposely changed, and noted. The metric system has been used for convenience in calculating proportions, but all of my statements are made in the form of one part of the medicament or solution added to so many parts of the broth. It will be noted that this does not represent percentages. In the construction of tables of results, I have in each case copied actual experiments, as the notes were made at the time, but of course do not give all of the experiments with each drug, only a representative one selected from those made.

Relating to the essential oils I have made the experiments in two classes, the one with the oil in substance and the other with the aqueous solution of the oil. Since the solubility of the oils is not accurately known, the quantitative value of the solution becomes much more important than the quantitative value of the oil in substance, for the reason that in most of the uses of antiseptics it is only the solution that is effective. This is not so generally true of the oils as of crystalline substances; for in many cases the oil in substance may be effective, but crystalline substances can not act at all until dissolved. For this reason I have in all cases given the quantitative value of the solutions of crystalline substances.

It seems to have become a custom among experimenters in this field to state effective proportions in the greatest number of figures possible; or to give the proportions of drugs in substance no matter how insoluble they may be, or in what proportion the solution may be effective. This is liable to be very misleading for the reason that it gives no idea of the range of value the drug may possess. This *range of value* is found in the difference between the saturated solution and the greatest dilution that will inhibit growth. For instance, if a given drug is effective as an antiseptic in a tube test in the proportion of 1 to 1100, and dissolves only in the proportion of 1 to 1000, it has a very short *range* of antiseptic value and must fall below the line of effective work the moment it is mixed with the secretions of a wound. On the other hand, if a drug dissolves in the proportion of 1 to 1000, and is effective in the proportion of 1 to 10000, (1 to 10 of the solution) it has a fairly long range of value; and in this case the saturated solution may be much diluted by the secretions and still do effective work. With very poisonous drugs that are freely soluble, this range must be supposed to begin with such a dilution as may be borne by the tissues without serious evil effects. I should not say that such a drug as the first named could be of no real value, but it is evident that its use should be limited to a class of cases in which it would not be mixed with secretions or other substances calculated to limit its action, or cause it to fall below the line of active work by reason of dilution. I have therefore thought it well to give the value of the solutions as such, and in this way illustrate the range of value of the drugs studied. With those drugs that are too poisonous to be used in saturated solution, the degree of concentration that may be borne will vary so much in different cases that no statement can be made. I think that a study of the tables presented will demonstrate the usefulness of this form of presentation.

All solutions are saturated aqueous solutions, except those in which the percentage is given. The solutions of the essential oils are all made in the following manner: An excess of the oil is mixed with water by violent shaking continued for some minutes. It is then placed in the incubating oven, where the temperature is 99° Fahr., for twelve hours. It is then again violently shaken and returned to the oven for another twelve hours, twenty-four hours in all. It is then carefully filtered, and if not perfectly clear and free from all appearance of oil it is refiltered until it is clear. This filtrate is then used as the solution of the oil. The same plan has been used in making saturated solutions of the crystalline substances.

In all of the tables, the numbers that proved effective in the prevention of growth are printed in ordinary type, while those that were found ineffective are printed in boldface type. If growth has not occurred within the first twenty-four hours, but has occurred within the second, a star follows the number; and if growth has been delayed until the third day, or could not be demonstrated until that time, two stars will be found, and so on.

I have also grouped the derivatives of the oils with the oils to which they belong, otherwise I have placed the medicaments in the table alphabetically:

TABLE.

Aseptol, (Merck's 33.3% sol.)	1–10, 1–15, 1–20, **1–25**.
Benzoic acid, (sol.)	1–1, **1–2**, **1–3**.
Beta-naphthol, (sol.)	1–1, 1–2, 1–3, **1–4**, **1–5**.
Boracic acid, (sol.)	1–4, 1–6, **1–8***, **1–10**.
Carbolic acid,	1–300, **1–560**, **1–900**.
5% solution	1–8, 1–10, 1–12, 1–15, **1–20**.
Copper sulphate. (sol.)	1–100, **1–200***, **1–400**.
Creosote, (commercial)	1–400, **1–500**, **1–900**.
Morson's wood tar,	1–700, 1–910, **1–1200**.
Solution	1–1, 1–2, **1–4**, **1–8**.
Hydronaphthol, (sol.)	1–1, 1–2, 1–3, **1–4**, **1–5**.
Iodoform	Growth in saturated solution among the undissolved powder.
Bichloride of Mercury	1–25000, 1–50000, **1–100000**.
1–500 solution	1–50, 1–100, **1–200**.
Resorcin (6.5% sol.)	1–4, 1–6, **1–8***, **1–10**.
Oil of bergamot	1–200, **1–400**, **1–720**.
Solution	**1–1**, **1–4**, **1–5**.

Oil of cajeput	Growth in the emulsion.
Oil of cassia	1–3000, 1–4000, **1–5000***.
Solution	1–2, 1–3, 1–4, 1–8, **1–10***.
Oil of cinnamon (Ceylon)	1–2000, **1–2700***, **1–4000**.
Solution	1–1, 1–2, 1–3, **1–4***, **1–5**.
Oil of cloves	1–1100, 1–1200, **1–2000**.
Solution	1–1, 1–2, **1–3***, **1–4**.
Eugenol	1–640, 1–800, **1–1200**.
Solution	1–1, 1–2, 1–3, **1–4***, **1–5**.
Oil of copaiba	Growth in the emulsion.
Oil of coriander	Growth in the emulsion.
Oil of cubebs	Growth in the emulsion.
Oil of eucalyptus	Growth in the emulsion.
Eucalypti extract,	1–100, **1–240**, **1–480**.
Solution	**1–1***, **1–2**, **1–3**, **1–4**, **1–5**.
Eucalyptol	1–100, 1–380, **1–650**.
Solution	**1–1**, **1–2**, **1–3**, **1–4**, **1–5**.
Oil of fennel	Growth in the emulsion.
Oil of mustard	1–1000, 1–1500, **1–2000**.
Solution	1–1, 1–2, **1–4***, **1–6**, **1–10**.
Oil of pennyroyal	1–480, 1–720, **1–960**.
Solution	**1–1**, **1–2**, **1–3**, **1–4**, **1–5**.
Oil of peppermint	1–375, **1–600**, **1–800**.
Solution	**1–1**, **1–2**, **1–3**, **1–4**, **1–5**.
Menthol, (sol.)	**1–1**, **1–2**, **1–3**, **1–4**, **1–5**.
Oil of Sassafras	1–270, 1–540, **1–800**.
Solution	**1–1**, **1–2**, **1–3**, **1–4**, **1–5**.
Oil of thyme	Growth in the emulsion.
Oil of turpentine, (Merck's rec.)	1–500, 1–600, **1–800**.
Solution	1–1, **1–2***, **1–3**, **1–4**, **1–5**.
Terebene	**1–480***, **1–800**, **1–1400**.
Solution	**1–1***, **1–2**, **1–3**, **1–4**, **1–5**.
Terpinol	1–520, 1–720, **1–960**.
Solution	1–1, 1–2, **1–3**, **1–4**, **1–5**.
Oil of valerian	Growth in the emulsion.
Oil of wintergreen	Growth in the emulsion.
Salicylic acid, (sol.)	1–1, 1–2, **1–3***, **1–4**, **1–5**.
Oil of wormseed	1–280, **1–720**, **1–880**.
Solution	**1–1**, **1–2**, **1–3**, **1–4**, **1–5**.

EXPERIMENTAL TESTS IN BROTH CONTAINING FIVE PER CENT OF EGG ALBUMEN.

In the following tests three solutions of the bichloride of mercury were used. A 1–500 solution of bichloride of mercury was made and divided into three equal parts. That marked (p) was left plain. That marked (a) received 5 per cent of hydrochloric acid. That marked (s) received 10 per cent of chloride of sodium.

Solution (p), 1–5000, 1–7500, 1–10000, 1–15000.
Solution (s), 1,5000*, 1–7500*, 1–10000, 1–15000.
Solution (a), 1–5000*–, 5–7500*, 1–10000, 1–15000.
Solution (p), 1–1000, 1–2000**, 1–3000**, 1–4000*.
Solution (s), 1–1000, 1–2000***, 1–3000**, 1–4000*.
Solution (a), 1–1000, 1–2000. 1–3000, 1–4000.
Carbolic acid, (5 per ct. sol.). 1–8, 1–10, 1–12, 1–15, 1–20.
Oil of cassia, (sol.)........ 1–3, 1–5, 1–8, 1–10*.
Copper sulphate (sol.)..... 1–100, 1–200, 1–400.

A perusal of the table will show that, of the oils thus far studied, some are of no value, while there is a wide difference in the range of antiseptic value of those that inhibit growth. Some of those of widely reputed merit are shown to be of no value whatever. This is especially true of oil of wintergreen, of which salicylic acid is a derivative. I tried a number of specimens of this oil obtained from different sources, and microbes grew freely in the emulsion of each, while salicylic acid has a moderate range of antiseptic value. It is to this matter of *range of antiseptic value* that I wish especially to call the attention of the profession at this time. I think that very few appreciate the shortness of the range through which any drug may be used for this purpose. That is to say, the point of concentration that will inhibit the growth of microbes is generally not very far from the point that will seriously injure any animal tissue to which it may be applied, or be liable to produce toxic effects by absorption; or, if the medicine is one that is but feebly poisonous to the animal tissues, its range of antiseptic value is very short indeed. There are but few and uncertain exceptions to this rule among the antiseptics that I have thus far studied. The general rule is: the greater the range of antiseptic value, the more dangerously poisonous the drug. Bichloride of mercury has a very great range of antiseptic power, in the absence of albumen, and it is also very poisonous. On the other hand, the preparations of eucalyptus are very feeble poisons, so feeble that they may be used upon the tissues almost at will. But at the same time my trials show them to be very feeble antiseptics, and to have a very short range of value indeed. Nothing less than the saturated solution is effective in inhibiting growth. The specimens of the oil that I have had have not been effective in any proportion, but the other two preparations, eucalypti extract and eucalyptol, have been so, and these really exert a restraining power that I am unable to express in my tables. Indeed, I do not feel that I yet understand this power which I find so prominent in eucalypti extract, and especially in oil of cassia. For instance, microbes grow promptly in a broth to which an equal volume of the saturated solution of the eucalypti extract is added, but the growth seems abnormal to such a degree that the specimen has no resemblance to the control tube. The broth usually remains entirely clear, while waxy bulbs grow up in the bottom of the tube, or cling to its sides. This character is presented, lessening in degree very slowly as the dilution is increased, so that in one of the solution to four of broth the growth is usually less than one-fourth that in the control tube, and has a very different appearance. It is in this restriction of the growth of microbes that this drug has its value, rather than by its complete inhibition of growth.

This peculiarity is still more strongly expressed in the oil of cassia, and in this case it is united with a fairly wide range of antiseptic value. Indeed this drug presents the widest range of power, all things considered, of any that I have thus far studied. That is, if we consider its use in substance, in the emulsion, in solution, and in relation to its behavior toward albumen, which will be especially considered presently. The drugs most likely to dispute this are carbolic acid, boracic acid, and possibly resorcin and aseptol. Its virtues, as is the case with all of the powerful antiseptics, receives a check in the development of its irritating properties. This is sufficient to blister the skin after rubbing on the oil three or four times a day for two days. I have used it in this way in the treatment of some skin affections supposed to be microbic in their etiology, with very prompt results. When the blisters were healed the case was well in each instance. It has also proven the most effective antipyogenic that I have yet employed. It may be used in the form of an emulsion in any but very large abcesses or infected wounds. At my suggestion, Dr. David Prince has been using it in capital surgical procedures with the most excellent results in the prevention of pus formation and sepsis, but he finds that where the pure oil comes in contact with the skin and remains for some time it produces a blister. In dentistry, the pure oil or the oil diluted with a bland oil makes a most excellent dressing for foul root canals and abscesses. In substance it should not be frequently repeated in the treatment of abscesses, however, on account of its irritating property. It is this oil that renders the 1–2–3 mixture so efficient.

℞ Carbolic acid, (melted crystals)	1 part.
Oil of cassia,	2 parts.
Oil of wintergreeen,	3 parts.

Mix the oils and add the melted crystals of carbolic acid.

My original thought in the mixing of this preparation was to get the best possible antiseptic effect of the carbolic acid and at the same time overcome its evil effects on the tissues by the stimulating effects of the oils; but I had not used it long until I found that I had something else, something that I never understood fully until I had made experimental studies of the oil of cassia. Really, the 1–2–3 mixture has a range of antispeptic value much greater than carbolic acid without its evil effects on the tissues; or at least, with a very great moderation of them.

Two other points in regard to the oil of cassia should receive mention; the fluctuation in quality and the deterioration of the saturated solution by standing. As to the first, I have had a number of samples bought in the market and the results with the best and worst will suffice.

The saturated solution of the best gave:

1–1, 1–3, 1–5. 1–8, **1–10***.

Of the worst:

1–1, 1–2, 1–3, 1–4, **1–5***.

A difference of considerable moment. Nevertheless, dealers inform me that the oil of cassia, being one of the cheaper oils, is much less liable to adulteration than the more costly ones. But little seems to be known of the production of this oil. It all comes from the interior of China, and no one seems to know much about it.

As to the deterioration of the solution, I have but one observation. A bottle of the filtered solution stood in the case at the college from May to January, fully exposed to the light. The following trials were made with it:

1–1, 1–2, **1–3***, **1–4**, **1–5**.

The bottle, unfortunately, had lost its special mark, and I would not risk saying to which of my samples it belonged; but in any case it shows a considerable reduction of antiseptic value.

I can not now take time for the discussion of special drugs, or even mention many of the articles included in the tables. It will be seen that many of the oils studied are of no value, while some of them may be made useful. A study of the tables in connection with the properties of the oils already well known in our literature, will be a sufficient guide in their use, and the selection of them for special purposes.

Forms of antiseptics for use: In regard to the use of antiseptics in different cases and for different purposes, I should divide them into three forms, each of which has especial advantages.

These forms are: the solution in water, the oil, and the powder.

The solution in water is especially useful for cleaning infected surfaces of wounds, washing abscesses and, indeed, in any case where there is something that can be removed by washing. In the performance of this act the antiseptic is diffused to all parts of the wound or abscess mechanically, to the best advantage. It is more likely to reach every part in this form than in any other; and this is an advantage that can hardly be over-estimated; for it is very difficult to reach all parts of an abscess by any mode of procedure now known to us on account of the very tardy diffusion of liquids. And in case the liquid containing the antiseptic in solution does diffuse, its very diffusion and mixture with the surrounding fluids soon dilutes it below its range of antiseptic value. It is therefore necessary that the washing be continuous to obtain the continuous effect of the drug. This is generally impracticable, and for this reason the watery form of antiseptics is very much limited in usefulness. The continuous drip, or the application as often as every fifteen or twenty minutes gives effective results in some favored localities; but it is very difficult to carry out and occasions much trouble. The continuous bath is still more limited in its range of application. Neither of these can be used in dental practice. With us the watery form of antiseptics should be limited to the cleaning of infected parts. They can not be trusted to prevent septic action for any length of time, for the reason that they so soon become diluted below their range of antiseptic value by mixture with the secretions, or the juices of the flesh. Since studying the powers of antiseptics and disinfectants more closely, my feeling is that it will not do for us to expect to do much disinfectant work in connection with the soft tissues, except in cases in which some tissue destruction can be borne; and that antiseptics only retard the growth of microbes during their presence in effective proportions; hence the necessity for continuous or oft-repeated application. In using these for the purpose of cleaning, much aid may be had by making use of the solution in peroxide of hydrogen instead of water, so as to obtain the mechanical effect of the ebullition of the oxygen evolved in mixing the antiseptic with the secretions. There is possibly some antiseptic virtue in the oxygen itself as well, but I am apt to think that its principal use is the mechanical one. And that is a very important use.

Thorough cleaning is excellent antiseptic work, and the peroxide of hydrogen will do this in many positions where nothing else will, and at the same time carry the antiseptic proper to the more remote parts of the wound or abscess.

THE OILS.

After thorough cleaning with the watery form of the antiseptic we need something that will be more enduring in its effects, and according to conditions should choose between the oils and the powders. If it is an abscess with which we have to deal, an oil which is in itself an antiseptic, or an oil holding the antiseptic drug in solution in effective proportions, may be introduced into the cavity and so agitated as best to bring it in contact with all of its parts. This will, on account of its sparing solubility, remain in position very much longer than the watery forms, and the essential oils are very much more diffusible than the fixed oils, or, indeed any other of the simple forms of the antiseptics with which I am yet acquainted. At the same time a sufficient amount for very extended work is contained in small compass. These are of especial value in such positions as the roots of teeth. In this position any but the most irritating of the antiseptic essential oils may be used to good advantage, and may be relied upon for many days together. In the choice of the essential oils it is by no means necessary that the most powerful of them be selected. It should be remembered in making the choice that the more powerful antiseptics are the more irritating, as a rule. It is therefore often best to choose antiseptics of very moderate range, especially where it is only required to preserve a condition of asepsis. For instance, when a very foul root canal is opened such an antiseptic as the oil of cassia is indicated. After appropriate cleaning, and especially in case cleaning is to be deferred for fear of forcing poisonous material thorough the apical foremen, it may be used in full strength; in which form it may be relied upon as a disinfectant as well. But afterward, when it is only a matter of holding an aseptic condition during the healing of the parts, an antiseptic of shorter range, that is not so liable to injure the tissues, is to be preferred. For this purpose the eucalypti extract in substance is a very useful agent. Its range of actual inhibition is very short, but its injurious effects on the tissues are also very slight, so that the healing process may go on in its presence without hindrance. Furthermore, this oil has a very extended range of restraining influence beyond its range of actual inhibition that is undoubtedly of much use. This oil may be exchanged for terpinol where a little more stimulating effect is regarded as beneficial. The oil of cloves and the oil of cinnamon seem to occupy a middle ground and may be made useful in a large class of cases if the others are in any wise distasteful to the dentist or his patient. The oil of mustard, though a good antiseptic of short range, has an irritant action that limits its use. Yet in cases where it is desirable to arouse the tissues from a state of inactivity this action, in a high degree, is combined with the antiseptic property. It is also one of the most diffusible of the antiseptic oils thus far studied.

Any of these oils may be used in the emulsion if for any reason it is not thought well to use the oil in substance. This form is especially recommended for surfaces of suppurating wounds and the washing of abscesses. In this way small quantities of the oil may be widely diffused and left in a multitude of minute globules to gradually dissolve where it is most wanted, forming a kind of connecting link between the true solutions and the oils in substance. For this purpose a little of the oil selected may be diffused through water by severe shaking, or better, by repeatedly filling and violently emptying the syringe. The milky emulsion thus formed may be used in the same manner as the solution.

I have said that all antiseptics are poisons. I wish to emphasize this statement. They are antiseptic by virtue of their power of restraining life forces; and their use as antiseptics is permitted only by shades of difference in the action of certain poisons toward the different forms of life, by which they effect the fungi more prominently than the animal tissues.

In the medical sense a drug is not necessarily an antiseptic because it is a poison, for in some cases, as with croton oil and arsenic, the effect on the animal tissues is the greater, while with others the effects run almost parallel. Furthermore, each of the antiseptics has its own peculiar quality of poisonous effect; and in this respect a choice is to be made of antiseptics for application in special cases. For instance, carbolic acid has the property of benumbing the parts to which it is applied, and the slowing of all the life processes; the oil of cassia has, on the other hand, the reverse effect of quickening all of these movements. The one is a depressant irritant, while the other is a stimulant irritant, or excitant. These properties are happily blended in the 1-2-3 mixture. The range of value of the eucalypti extract may be increased and its qualities rendered suitable for this case or that, as they are presented, by the admixture of the stronger antiseptics, such as five per cent of the crystals of carbolic acid, or five per cent of oil of cassia, more or less, as may seem best. In such ways mixtures may be formed that will unite in the greatest degree such effects as we may wish to combine with the antiseptic property.

THE POWDERS.

The form of powder has become known in surgery as the dry antiseptic dressing. For this purpose a crystalline antiseptic in the form of a powder is required, the saturated solution of which will not be too irritating. It is sufficiently manifest that very poisonous drugs cannot be employed for this purpose, for by their solution in the secretions they would do irreparable injury. As a dry dressing boracic acid seems to stand at the head of the list. It has a longer range of antiseptic power than any other that may be used in this form, and the quality of the irritation produced is not such as to seriously hinder the growth of granulations, so that wounds heal readily in its presence. We have, however, in hydronaphthol, beta-naphthol and salicylic acid, drugs that may be used in the same way very effectively, though they are of much shorter range of value, and probably not so diffusible; and, withal, are not so kindly borne by the tissues. I once saved a life by stuffing a quinine jar full of salicylic acid into a stinking gunshot wound at a time when the patient was in a state of apparent coma from septic fever.

The plan of the dry antiseptic dressing is to heap the powder in more or less thickness on the wound and apply retaining bandages over it so that the antiseptic may slowly dissolve in the secretions and in this way keep up constantly something near a saturated solution in contact with the wound. In this way the dry dressing acts much in the same manner as the oil dressing. Indeed, the object is the same in each case, i. e., to keep an effective solution of the antiseptic in contact with the wound continuously. In this respect these modes of application are the counterpart of the watery forms applied in the form of the continuous drip or the bath, and when applied successfully have the same result with much less difficulty in their application.

This leads me to speak just here of the principle that should hold in the use of all of the antiseptic drugs; that of continuous application for a long period, or until the wound has healed. The antiseptics are not *disinfectants*. They do not destroy micro-organisms, but only prevent their growth. If the antiseptic is removed, or is reduced below its range of antiseptic value by dilution in the secretions, sepsis may occur. A failure to appreciate this fact is the most general explanation of the failures that are so often seen in surgical practice. How long micro-organisms will live while their growth is held in check by an antiseptic, we do not yet know, but it is certain that they will live for many days in the presence of most of the antiseptics that are safe to use on the tissues. That they die in time there is no doubt, but how long they live is a question not yet solved. They seem to die as a shrub would when placed under conditions that prevent its growth, and are as apt to spring into active life if the conditions of their development are restored by the removal, or dilution of the antiseptic, as the shrub when planted in good soil.

A very serious difficulty in the use of the dry antiseptic dressing in surgery exists in the caking of the powders by being moistened with the secretions, so that, with the reduction of the secretions after a few days, a space is left bewteen this caked material and the surface of the wound. In this case the dissolved antiseptic is soon diluted below its range of antiseptic value and is as completely removed as if taken away altogether. Then, a septic condition may develop under the arch thus formed. If we undertake to prevent this by using but little of the powder, we are liable not to have a sufficient quantity for solution in the secretions and fail to mend matters. In this dilemma it has been proposed by Dr. Prince to make use of the vapor of the essential oils in connection with the dry dressing. This suggestion seems to have sprung from some clinical observations of the excellent effects of the oil of cassia placed in considerable quantity on boracic acid after it was heaped up over the wound after ovariotomy. When this suggestion was communicated to me I at once made a number of experiments with the view of testing its merits, but have found it very difficult to copy the conditions by artificial modes. My experiments were made in this way; a test tube containing ordinary beef broth (about two inches in depth) was infected with saliva, as usual in my experiments, and, before replacing the cotton stopper, a drop of the oil of cassia was placed on its lower end. In this case there was constantly a marked modification of the growth, but not a complete inhibition. A normal growth occurred in the lower portion of the broth while about one-fourth of the upper portion remained clear. These experiments indicate that the vapor of this oil will dissolve in the secretions sufficiently to inhibit growth in the surface portions; but that its diffusion is not sufficient for it to extend to any considerable depth. From this it seems probable that this kind of combination of an oil with the dry dressing will enhance its value.

Another form in which the crystalline antiseptics have an important, though limited, use is the hypodermic injection. For this purpose, those that are but slightly soluble in water or the juices of the flesh, are dissolved in ether, or similar menstruum, and injected into the tissues. In this case the substance is quickly precipitated in the tissues to be slowly dissolved by the juices of the flesh and maintain an antiseptic action for a considerable time. By this plan some affections may be treated successfully that can not be reached by other forms of application, such as erysipelas, progressive gangrene and those of like nature. This form of application may be occasionally used effectively for the prevention of putrefactive changes in ligated stumps of tumors, such as occur frequently in ovariotomy and other pedicular tumors. The conditions indicating this form of use may be presented about the mouth at any time.

The diffusion of antiseptics, or rather the difficulty of diffusion is a subject that has strongly attracted my attention since I have been experimenting with the drugs named in the tables. In some experiments undertaken for the study of this subject I have found it possible to inhibit growth in the upper portion of the broth in a tube while the lower part was growing in a normal manner. This is very readily done by allowing the solution of bichloride of mercury, in sufficient amount to inhibit growth in the whole of the broth, to run down the side of the tube and spread over the surface of the broth. The tube should be set away quietly. There will be so little diffusion of the bichloride that the broth will be decomposed to within a short distance of the top, while this portion will remain clear and free from growth. Although I have made a considerable number of experiments, I have not studied this subject at all sufficiently, but what I have seen indicates that much may be done to increase the diffusion of antiseptics in the secretions of wounds and the juices of the flesh in the neighborhood of injuries. For instance, A 1-500 solution of bichloride of mercury, in sufficient quantity to inhibit growth in the contents of a certain tube when well mixed, will diffuse so as to inhibit growth but one inch in a horizontal direction. If, however, five per cent of hydrochloric acid is added to the bichloride solution, the diffusion will extend about four inches. The addition of the same amount of common salt will serve to extend the diffusion almost as much. My experiments also confirm what was before known to physicists; that diffusion of liquids takes place very slowly through narrow openings. If two tubes connected by a narrow opening are filled with infected broth and an antiseptic added to one, growth will be inhibited in the one while it will progress normally in the other. There will be little or no diffusion through the narrow opening. These are facts of very considerable importance in the treatment of abscesses and sinuses, and especially infected penetrating wounds; and suggest strongly the value of peroxide of hydrogen as a solvent for the crystalline antiseptics, and the oils as well.

It also shows plainly that we can not expect that the influence of antiseptics laid in root canals will extend to the tissues beyond the apical foramen, unless the medicament is forced through at the time of its application.

The relation of albumen to antiseptic work is of very considerable importance for the reason that its presence contra-indicates one of the most powerful of the antiseptics in use—bichloride of mercury. It has long been known that albumen is an antidote for bichloride of mercury. Yet, on account of its great potency in the absence of albumen, the drug has grown into very extended use in the utmost disregard of the antagonism of the two substances. Experimental tests indicating this have been published by several experimenters, but seem to have been heeded by very few medical men. In order to estimate the degree of antagonism that exists between these two substances, and to see if this applied to other drugs as well, I began a series of comparative experiments, but have not found the time to carry them through with any considerable number of medicaments. I have, however, made fairly thorough work with bichloride of mercury, the results of which are given in the tables. My first experiments (not given in the tables) were in reference to the decomposition of the solution of the bichloride when exposed continuously to light. These experiments showed conclusively that for a period of two months, the addition of five per cent of hydrochloric acid to the solution of 1-500 of the bichloride, protected it perfectly ; so that its range of antiseptic value was the same at the end of that time as at the beginning. The plan of experimentation was to mix the solution and set it in the full light of day (not in the sun). This solution was tested for its limit of antiseptic value in a certain broth infected with saliva. Other tubes of the same broth were kept for the purpose, and two tests made each week for the period of two months, without showing any diminution of power. The same solution, without the addition of the acid, lost power very rapidly.

The experiments for testing the influence of albumen were first made with two solutions. Each contained one of the bichloride of mercury to 500 of water. To the one five per cent of hydrochloric acid was added, to the other ten per cent of chloride of sodium. The chloride of sodium was added through the suggestion that it would prevent the precipitation of the albumen by the bichloride, which, indeed, seems to be correct. I found that the addition of this solution to broth containing five per cent of albumen, caused no clouding of the liquid, while the addition of the other in even very minute quantities, rendered it milky and if much were added, the albumen was thrown down.

The tests made with these solutions (not given in tables) when compared with the power of the bichloride in the absence of albumen, show plainly that the two substances are antagonistic ; and that the addition of chloride of sodium is of no substantial advantage, notwithstanding the fact that the albumen is not precipitated.

I then made other solutions more carefully, in that a solution of 1 to 500 of the bichloride was divided into three parts in order to be sure that the three were exactly alike, and I give the results with these in the tables. The first was left plain (marked (p) in the tables). The second received five per cent of hydro-chloric acid (marked a), and the third received ten per cent chloride of sodium (marked s).

These solutions were then tried, using for the purpose a new broth, and gave a slightly higher range of value, either from a difference in the broth or in the solutions, it is difficult to tell which. These experiments show a great reduction of the range of value of the bichloride in the presence of albumen; and, when we consider that in many of the positions in which the antiseptic is used, there is present from eight to ten per cent of albumen, we can not expect much good from it in a dilution that could safely be placed in contact with the tissues. There is, however, a range of restraint, shown by the frequent asterisks in the table, which may account for some benefit in the use of the drug even though it does not fully inhibit growth. It will be noticed that the results with the plain solution are the poorest and the results of the hydrochloric acid solution are much the best. I take it that this effect represents the antiseptic value of the hydrochloric acid rather than any beneficial effects of this agent on the action of the bichloride of mercury.

These results are in substantial agreement with those obtained by Dr. Ernest Laplace, of New Orleans, under the direction of Prof. Koch, of Berlin, he using tartaric acid instead of hydrochloric acid. Also, with those by Van Ermengem, and those by Dr. Bolton, under the direction of Dr. Sternberg and reported by the American Public Health Association, pages 157 to 160 inclusive. The experiments have been very differently made in these different cases and the figures are different; yet the prominence of the loss of power of the bichloride in the presence of albumen is the same in all.

My own clinical observation agrees very well with the experimental results. For years past I have used only the 1 to 500 solution, when I have used it at all, as an antiseptic. My reasons for doing so were that it did not seem to effect the purposes intended if used in less strength; and even in that degree of concentration it has not proved a good antipyogenic unless the washing was carried on with a very large amount of the solution.

There can be no reasonable doubt of the effectiveness of the bichloride of mercury in the absence of albumen. Therefore, it ought to hold the place it has gained for the disinfection of instruments and of the skin previous to operations. It should, however, be used in greater strength than it is generally employed for these purposes.

I made various tests with the oil of cassia in connection with albumen and all of these gave results that coincide very perfectly with the experiments in broth without the addition of albumen. With this agent the presence of albumen is of no consequence.

The tests of the effects of albumen on the power of carbolic acid show a diminution of its range of value which remained constant, but it is so little that it may be safely ignored in practice.

I have made but few experiments with agents as disinfectants, and these few have been confined to bichloride of mercury and the oil of cassia. I made a number of efforts to sterilize saliva with the bichloride of mercury, all without success. I carried the concentration to 1–250, and planted from this at intervals for two days, with due caution, in well-proven sterile tubes of broth, but every one of them grew freely within the first twenty-four hours. The amount of albumen coagulated in the tubes of saliva shows plainly that the addition of five per cent of albumen to the broth is far too little to give the proper expression to the effect of albumen in the use of this drug in the mouth, in abscesses, or in wounds.

This is in agreement with Dr. Bolton's results (page 159, report of American Public Health Association) in which an addition of 1–100 of the bichloride of mercury was required to effect sterilization of broth in the presence of ten per cent of egg albumen.

Oil of cassia, in full strength, solution or in emulsion, destroys all micro-organisms, in the absence of spores, promptly, but the spores of B. subtilis and some other bacilli resist it for a considerable time. However, my experiments have not yet been sufficiently attested by repetition for me to feel like giving exact figures.

DISCUSSION.

The President then announced that the paper of Dr. Black was open for discussion, and he would call upon Dr. C. M. Bailey of Minneapolis, to make the opening remarks. He said: Mr. President —I have been greatly interested in listening to this paper, and may say I had the pleasure of looking it over yesterday. I feel that the line of argument which Dr. Black has followed in the paper is one of value to us as dental practitioners. Since the day when the germ theory of disease was brought to the notice of the profession, we have had a multitude of agents which have been said to utterly destroy micro-organisms. There is scarcely a magazine, in every issue of which we do not find some one or more of these agents brought to our notice, said to be perfectly harmless, and capable of destroying the micro-organisms which are the cause of all these diseases. I notice particularly that Dr. Black's effort in this direction is to ascertain the value of the different agents, and the range of their action. He has materially reduced the number of those he has tried and tested in his test-tubes, many of which we can easily put to one side. Another thing: I was glad to notice his definition of the word "antiseptics," for in our teaching, books, and reading in journals, from which we get our information, I think the word is used interchangably with the word "disinfectants" and is misleading not only as to the effect of the drugs, but also in our use of them in practice. Antiseptics may be considered to apply to those agents which usually inhibit the growth of the organism, and disinfectant to take the place of (but which is not so good a word) germicide, which seems to be so constantly in use to-day. In this connection particular attention was called to the fact that these drugs are used in a strength necessary to destroy the germs which produce those diseases that become dangerous to the system, making it necessary for us to consider (if these experiments be true) simply the power of controlling the growth of these microbes until a cure is effected. And that leads to a consideration of one theory of the cause of these diseases, which is old, and which I think should not be lost sight of—namely, that all metamorphosed tissue results from a lowering of the vitality, either of the general system or of the part directly attacked. It has been shown that these microbes have no power of reproduction of growth in the presence of healthy tissue, that in due course of time if the tissue is healthy, they will be expelled from the system and a cure affected without the aid of drugs. An illustration of this perhaps would be a common boil, where we have suppuration of the dead tissue, where the system drives out septic matter of itself without the intervention of antiseptics; and, at the same time, we know that the action of these drugs has not been verified by clinical observations, but by the experiments of Dr. Black we may find their explanation. He has called particular attention to iodoform and I think with him that many times the fact has been established that iodoform does not destroy the germs nor inhibit their growth. He has spoken of the oil of cassia. I am not as familiar with the use of that agent as an antiseptic as I could wish to be, but it maybe we shall obtain some local stimulus in the use of it.

I will call the attention of the Society to one or two cases bearing upon what I have said. I remember one case that came to me about three years ago; a lady with a central and lateral incisor badly blackened by decay, with a fistulous opening from each of them. They had been under constant treatment for several years. She was very anxious to save them. After cleaning out the roots I found them decayed nearly to the apices. In this case I attempted sterilization of the canal with iodoform dissolved in eucalyptus oil. Both agents you will notice the essayist has shown to be valueless in the matter of inhibition of the microbes. I used the eucalyptus oil to control the odor of the iodoform. After thoroughly disinfecting the canal, or using it for that purpose, I treated it as I always do, by putting a drill through the end of the root, having a clear opening into the sac at the end, then dressed the same antiseptically, with a pledget of cotton pressed to the opening, and discharged the patient for a day or two to see the effects. The next day on making a careful examination of the canal with a probe I found some spiculæ of bone, and I syringed the cavity through the root canal. The canal was so much decayed that I could carry it quite far up, forcing aromatic sulphuric acid at full strength through the canal in both instances. My further treatment was simply with the iodoform and eucalyptus oil, and after two weeks of treatment there was an apparently perfect healing of the parts which have remained healthy to this time.

The other case to which I desire very briefly to refer was that of a gentleman, who had one or two central incisors broken down by decay and desired two gold shell crowns placed upon them. As he insisted upon gold rather than porcelain crowns, I began to prepare the roots and found them infected with signs of abscess. The gentleman left the office and did not return for three or four days. The treatment was the same as in the former case. The root was thoroughly cleansed; I drilled through the end of it into the sac, and syringed with aromatic sulphuric acid until it came out through the gum, and discharged the patient for two days. My further treatment was iodoform and eucalyptus oil, this resulted in a cure in a short time. He has been wearing those crowns for two years, and they are the principal masticating surfaces. I report these simply as clinical cases, which, I am willing to admit, are empirical, in that they do not give to us the method of action of the drug. We simply ascertain by the use of a drug that a certain result is obtained without knowing *why* or *how*, and as such, I must say, that although Dr. Black has shown by his experiments the powerlessness of these agents to destroy the microbes, I think I must still continue to use them.

(Dr. Crouse at this juncture called the attention of the society and the visiting dentists to a circular that had been distributed among them embodying the objects and advantages of the Dental Protective Association.)

Dr. Sudduth of Philadelphia: The paper which has been read is too valuable to pass without careful consideration, as all of Dr. Black's contributions are. It is one of vital interest to the profession. Many points have been brought out that have been more or less in dispute from time to time, and he has a synthetic method of presenting facts to us that is very valuable indeed. In all our scientific investigations it is absolutely necessary that our results shall be accurate and available, that every means should be taken to avoid error, and I want to call the attention of Dr. Black to one or two points where it seems to me he could have bettered these investigations somewhat, and points we will take up later when he will talk about them himself. This work requires a great deal of time, and with the amount of work on hand it is impossible to bring out and complete the report in as accurate a way as is necessary in order to make it thoroughly correct in one paper. I have no doubt he will follow this with other papers in the continuation of his experiments.

I notice that in the use of infecting material he used his own saliva. At different times and under different circumstances that saliva would vary. In other cases it would, to a certain extent, militate against the exactness of the results. It seems to me it would have been better to have used a pure culture under all circumstances. Another point in regard to the use of the words "disinfectant" and "antiseptic". I like his definiton of these terms very much indeed, but the statement was made that it is impossible to perform disinfection in soft tissue ; so it is in surgical wounds. The point of interest to dentists in particular is the disinfection of the oral cavity. The oral cavity in a state of health is lined by epithelium and is protected against the action of the medicaments which are poisons, as stated, in their deleterious action upon the tissues. The use of these different agents in the root canals is necessary to accomplish thorough disinfection, and there can be no possible trouble resulting beyond that. Experiments with hydrochloric acid, and with the different acids to prevent the formation of albuminates have been gone over. Dr. La Place, in his work in Berlin, commenced first with hydrochloric acid, and he proved that the addition of this acid with bichloride prevented the formation of albuminates, so that surgical dressings were not only antiseptic but aseptic in their condition; whereas those dressings that do not have the addition of hydrochloric acid to them, are antiseptic to a certain extent, but not thoroughly so. The formation of a coat of albuminate underneath a dressing permitted suppuration to go on beneath it.

In regard to the use of antiseptics in root canals, there is no antiseptic better than the bichloride or mercury, $^1/_{500}$, with the addition of 5 per cent of tartaric acid, in any condition of the pulp canal where you want an antiseptic which will prevent the formation of albuminates, which has been the objection to carbolic acid in antisepticizing pulp canals. The essential oils in connection with root canals I should not advocate, because the bichloride of mercury, combined with tartaric acid would accomplish the purpose. The use of any oil is objectionable in filling. Where it is possible to use this combination, I should advocate it above all others. Reference was made to the use of iodoform. While it has been proven that iodoform was not a disinfectant, nor in a very high degree antiseptic, yet clinical experience beyond question bears us out in its use, and by the elaboration of iodine we have an antiseptic in this sense. Iodoform to-day is our main reliance, and surgeons are using it constantly in the dry dressing method.

With regard to boracic acid, which has been spoken of in connection with antisepsis, I may say that in ophthalmology, where it has been extensively used, it has been almost entirely discarded, and its place taken by the salicylate and chloride of soda. We want a disinfectant that can be used in pulp canals which will absolutely destroy the microbes found there. The bichloride of mercury disinfects a pulp canal; the same result may be accomplished by heat. Beyond that we want the same line of antiseptics found in Dr. Black's most admirable combination of 1-2-3. I was sorry he did not give us the results of the experiments with that mixture.

Dr. Thompson of Topeka: I would like to ask whether any of the members have observed that the bichloride of mercury blackens the teeth in cases in which it is used as a canal medicine. The first few cases in which I used it the teeth were as "black as a hat." I do not like to assail a remedy that has so many friends.

Dr. H. A. Smith of Cincinnati: I have listened with pleasure to the presentation of the subject of antiseptics. I have only a word or two to say. I have observed during the last two years that just in proportion as dentists understand this whole subject, are they successful. I have given a good deal of thought to it, and have read almost everything accessible on the subject, although I have made no experiments in the direction which Professor Black has treated us to to-day, but I wish to be understood that this subject is worthy of the closest scientific investigation. If we wish to succeed as practitioners of dentistry it must be through a thorough understanding of the whole subject under consideration.

Dr. Harlan of Chicago: I have not been listening to the discussion, but I have read the paper, and should say, from these carefully conducted experiments, while they seem to and do prove that many of the agents hitherto relied upon as antiseptics are of little or no value—that it opens up for the practitioner of dentistry a newer and pleasanter field, especially as relates to the class of agents that these particular experiments deal with. As many of you know, I have long been of the opinion, empirically, it is true, that in many instances the essential oils possessed properties that were unsuspected, and in fact overlooked; that while they had held a place in the practice of domestic medicine and dental surgery to a limited extent, yet they were only looked upon as make-shifts and not as possessing real beneficial properties in this direction. Most of you who have given any attention to this subject will remember that it has been stated that at a temperature a little below normal body heat, vaporizable camphors are capable of deposition which are themselves antiseptic. This is the property of the essential oils not considered in the excellent paper of Dr. Black, although in one instance he relates an experiment of placing some sterilized broth in a vessel and moistening the cotton stopper, and the vapor from the oil apparently inhibited the growth on the surface of the broth. That only points in a minor degree to the property I have spoken of as being possessed by the essential oils. At this moment I can not recall to your minds the exact reference where you will find that these camphors are positive substances that have already been recognized by two or three experimental chemists, so it is better to let that pass.

The value of these experiments to oral surgeons and dentists generally can not be overestimated. If you will remember for an instant, in the use of antiseptics in the teeth alone, pulpless teeth particularly, and I might say wholly, that when the dentine of the tooth becomes infected, these oleaginous agents are capable of diffusion to a certain extent through the dentine, but, if not themselves, their vapors will be diffused, and in that way, not being coagulants of tissue, will more thoroughly and completely disinfect the dentine than any of the agents heretofore used for this purpose.

It may be well, just at this point, to say that the definition I have in my mind of atiseptics and disinfectants is not the one conveyed to you by Dr. Black. I would not pretend to try to settle that question here and now, because if the word "antiseptics," as defined by Dr. Black, simply inhibits the growth of the microbe the microbe must necessarily die, so that an antiseptic in that sense would be a disinfectant. It may be seen now that if the microbe is destroyed on account of the contact or presence of the antiseptic, that the object is accomplished just as well as if it were done instantaneously, so that the benefit to the practitioner is the same, and to the patient upon whom he operates.

Dr. J. H. Woolley of Chicago: It is with considerable modesty that I make any remarks before so large an assemblage as this, in the presence of the men who have preceded me, and who have such a grasp of scientific principles that is worthy of any country or clime. Some gentleman, I think, spoke of heat as an antiseptic, and as soon as I heard that, it made me feel as though I wanted to say something upon that subject. I will be brief: I have for three or four years been experimenting with heat in devitalized teeth, and I will give an illustration of a case. I had under my care a blind abscess; I treated it for quite a long time, using antiseptics. Shortly after I thought that tooth was in a condition to fill although there was considerable trouble there yet. I used medicine thoroughly. I introduced into that root a heated broach, having a continuous heat, enough to vaporize water. After taking the broach out of the pulp canal I discovered a pungent odor, something akin to sulphuretted hydrogen. I worked with that heated broach as much as half an hour, and finally the bad odor ceased. Now, the question I wish to ask is, whether the medicine that was put in that tooth as an antiseptic was effectual? I would like to have that question answered by the scientific men present. I have used heat for three years, and have found it more successful than the other antiseptics.

Dr. G. D. Sitherwood of Bloomington, Illinois: I want to say at the outset that I was greatly interested in this paper, and came to Chicago more to hear it than anything else. There are some few things in it that impressed me very favorably, and one point is this: how to maintain that nicety of equilibrium, or whatever you may call it; notwithstanding that these agents, according to Dr. Black, are poisons, they are the best and quickest antiseptics we have; they are the quickest in action. If we do not use them, what agent or agents shall we use to fully do the work? And if you will allow me, I will say that I have been greatly interested during the last two weeks watching the operations of a physician in Bloomington in treating a case of burn, the patient being a lady whose clothing caught fire and was partially burned, and which is one of those cases in which we do not get much destruction of tissue. How did he cure that case? It was in using antiseptics in such a way that they did not destroy the tissues, but yet inhibited the growth of the pus microbes.

Dr. Black, in closing the discussion, said: Mr. President—In regard to sterilization of teeth or sterilization in the presence of albumen anywhere, I have in my report of the American Board of Health, in which there are a very large number of carefully performed experiments tabulated, together with those by Dr. Bolton, under the direction of Dr. Sternberg, of Washington, showed conclusively the inability to sterilize bouillon to which ten per cent of albumen had been added, with 1-100 of bichloride. Now, it strikes me that we do not want to use this drug in the mouth freely in this strength, and it certainly requires this strength to sterilize the contents of a pulp chamber.

In regard to iodoform, any of you can look these over (referring to his list of experiments.) In the absence of albumen 1–1000 was sufficient to sterilize broth or to sterilize an old culture. In the presence of ten per cent of albumen it is entitled to bichloride of mercury 1–100, which is enough of the bichloride to combine with the albumen and enough remaining to produce a sterilization.

With reference to clinical experience with iodoform, let me say this: it is not a reflection upon the medical profession to say it; only a few have realized what they should do or are able to do with antiseptics. One of these men a number of years ago said to me, "Come with me, I am going to make a post-mortem examination on a patient who has just died." It was a case of ovariotomy. Iodoform was used upon the surfaces where adhesion had broken up, and we found the surfaces covered with stinking pus, and the iodoform embedded among it. From that day to this that man has not used iodoform. The fact is, gentlemen, iodoform does not prevent suppuration ; that is its clinical history. On the other hand, it does seem to have a therapeutic action that is beneficial, but not as an antiseptic.

With respect to the 1, 2, 3 mixture, it is very funny. I tried over and over again to reach its limit in the tubes I had ; I could not divide it with the smallest tube I could get. I didn't like to make a solution of it in alcohol and use it in that way. Of course, I did do that with the oil of cassia, and made a 5 per cent solution in order to divide the iodine, and the alcohol would take up the ingredients in the same proportion and we probably would not get a true test. If I had large enough tubes I would have given you the results of this mixture. A single drop in 15 cubic centimetres of broth was always effectual, and that was just as little as I could get.

In regard to bichloride of mercury blackening the teeth, I cannot answer that question I do not know. I have not observed that it blackens the teeth.

In regard to vaporizable camphors, I have not much information on that subject. It is a difficult subject to study. I have not studied the point in relation to the essential oils that Dr. Harlan has referred to. I have noticed that camphors would be deposited upon my tubes; when deposited in sufficient amount I could break it up with the blade of a knife during the making of my solutions.

With reference to heat, which has been spoken of by Dr. Woolley, I would say that there is no doubt but there are good effects from heat, if we can get it where we desire it. We can not get it to all parts of the root canal. It would be a good thing to use in some root canals; it is valuable in some cases, but in others it is not.

Dr. Sudduth referred to using my own saliva for infection, and asked why I did not use the pure culture. I will tell you why. Pure cultures vary at different times more than the saliva of a mouth that is kept in a fairly equable condition. If a man brushes his teeth every day, cleanses his mouth regularly, his mouth will be in good condition, and he will find the same microbes there, and they will be in a healthy state. Microbes in infection are not in a healthy state by any means. In the range of tests made by pure cultures, the figures will run higher than if made by saliva. I have made enough tests to know that saliva is better in conducting these experiments. Another thing I want to say. We are liable to have the foundation pulled out from under us in this work, for certainly the methods employed by Koch and others must fail in time; that is, we must have something better and more reliable. The subject is young yet, and as we increase in our knowledge on this interesting subject we may find flaws in the foundation, where whole blocks will have to be taken out and build in new ones. This is not at all improbable. What I have given you is the best light I have on the subject at present. These experiments were commenced about ten months ago, and the only way we can hope to reach conclusions is by pursuing our investigations in this line.

FEBRUARY 6TH—EVENING SESSION.

The society reassembled at 7:30 P. M., and was called to order by the President.

Dr. R. R. Andrews of Cambridge, Mass., read a paper on "*The Development of the Teeth, the Formation of Dentine, and Its Appearance in Health and Decay."

The paper was illustrated by photo-micrographs projected on the screen by means of the oxy-hydrogen lantern. Many of the photographs were made for this demonstration; others were from Dr. W. D. Miller's beautiful specimens of Natural and Artificial Decay.

At the close of the lecture Dr. Black was called for. He said: I hardly know what I can say to you after such a representation as you all have seen this evening by means of the oxy-hydrogen lantern. It would seem rather more fitting that we all stop and think over it. I had never dreamed of the possibility that it could be made so perfect. You have seen the various micro-organisms and the formation of the tissues displayed on this screen with almost, if not quite, the perfection that we see them with the microscope itself. Only one of us at a time can see these things with the microscope, but here hundreds have been looking at them at once. Then,

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* This paper will appear in the April number.

too, most persons are not able to see them with the microscope, for microscopic observation requires a good deal of training. I have tried in years past to tell something about the subject of micro-organisms with my tube tests before the dentists of Illinois and some other State societies. I have shown them something of the production of acids demonstrated by artificial preparations thrown upon the screen, but here you seem to see things just as clearly. I do not know of any possible deception in these views; they represent simply facts that have taken years to work out. There are many things in microscopy that may deceive us, but certainly we can not be deceived as to the presence of the microbes in the places in which they have been pictured here, for we have seen them with our instruments for several years past.

Dr. Sudduth spoke in the highest terms of the work that had been accomplished by Dr. Andrews. He had dealt with the subject in a masterly manner, and the audience had witnessed what might be reasonably termed a positive demonstration of micrococci as projected on the screen. After seeing these micro-photographs every one had a right to form his opinion as to the function of the organisms. According to his views the matter had been positively demonstrated; it remained with the dentists whether to accept it or not; the literature on the subject was before them.

Dr. L. W. Comstock of Indianapolis, contributed a paper (illustrated by large cartoons) entitled :

ARTISTIC METHODS IN PROSTHETIC DENTISTRY.

Artistic methods in prosthetic dentistry are available to the dentist who has given to the study of the human face a large part of his time and learned what constitutes true proportion; because with this preparation he is enabled at once to see how a plan could be utilized to restore to comeliness a deformed visage.

Although this part of an artist's education is of first importance in esthetic dental prosthesis, I will try to avoid much mention of it;—assume that all here to-night are endowed with the ability to see as an artist sees, and that each one has established in his own mind a standard of proportion and beauty by which the real may be compared with the ideal, so that I may in proper order present artistic methods.

When a patron calls upon me to restore his mouth to a serviceable condition and his face to its normal shape, I provide drawing board, paper, charcoal and pen and then begin an examination of his head and face.

After a general inspection I search for defects and make a record of all that are found, sometimes by writing descriptions of them but more frequently by making sketches.

If the tout-ensemble strikes me, I embody in one sketch (see cut at end of the paper) the result of my observations, but if one position is not sufficient to show all of the features involved in the work of repair a second one is made, so that I have one profile and one full face. Time is wasted in an effort to secure a resemblance, as it is of no practical value in this work. From a position directly in front of the patient and at a distance which will permit me to see the proportions of the entire figure and compare the face with the size of the body, I watch the muscular action of the face, when an animated conversation is being carried on, and make note of any unusual exposure of the teeth and gums.

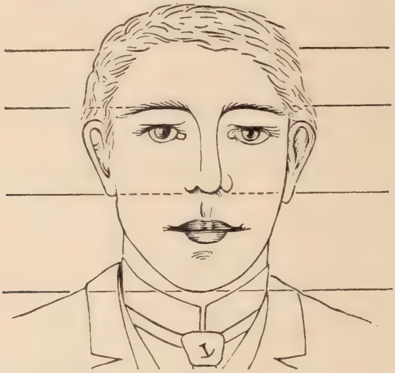


Fig. 1.

The common classifications of round, square, oval, sharp and flat faces are not explicit enough for the purpose in view, therefore the slight variations from these forms must be seen and remembered. If the face is too long from the nose to the bottom of the chin (Fig. 1) an opportunity is given to the dentist to improve the proportion by making the substitutes shorter than the natural teeth were, but do not lose sight of this fact, that first the discovery must be made that there is a disproportion. The casual observer does not take such matters into consideration when he contracts to construct an artificial denture.

We are obliged to lengthen the face when it is much shortened by the loss of the natural teeth (Fig. 2.) and then it is only a question of how much. The method of dividing the face into three equal parts by drawing lines across the lower part of the forehead, the end of the nose and the bottom of the chin is universally recognized as the correct course to pursue when representing true proportions. Most of the unsuccessful efforts to restore contour are attributable to ignorance of the laws of art or inability to see the disproportions.

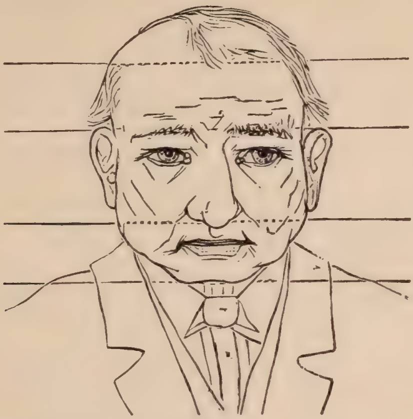


Fig. 2.

The harmony of the lines in faces must be considered, for in some types they are horizontal, as in the square-faced individual; in the Chinaman they are more or less oblique, and in the features of the plump and beautiful child there are no lines that are not gracefully curved.

Truly beautiful forms are always composed of curved lines, and an ornament designed so as to include both curved and straight lines must have two motifs, each one complete in itself. In building up the features these facts must be known and the principles involved must be put into practice.

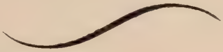


Fig. 3.

The least deviation in any part of Hogarth's line of beauty (Fig. 3) mars its symmetry. Make a dent in it, restore it and you have an illustration of a method of facial restoration, for is not the sunken cheek the dent in the graceful curve?

Straight lines have their proper relations one to the other, and I can make some homely illustrations serve me in proving this statement and also to demonstrate the effects of disregarding this fact when constructing dentures.

When the face is broad at the forehead and narrow at the chin (Fig. 4) the two exterior lines are the dominant ones, and all other lines of a perpendicular inclination must harmonize, that is conform; a line through the center leans neither to right nor the left, but the teeth must not all be set perpendicular. The bicuspidati must converge in order to present an acceptable appearance (Fig. 5).

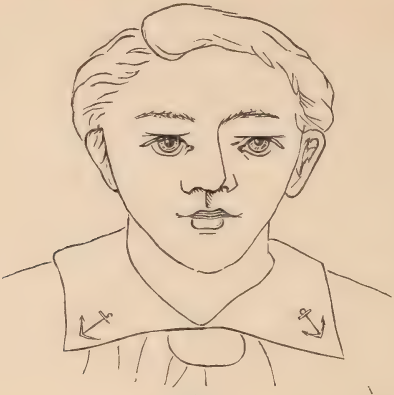


Fig. 4.

Reverse the condition. Look at the man from behind the bar with the narrow forehead and the broad jowl (Fig. 6). The lines diverge as they descend, and pinched in teeth would make him still more repulsive to look upon, but teeth that will stand out like the tail feathers upon a fan-tailed pigeon would suit him well (Fig. 7).

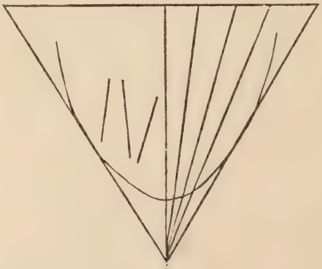


Fig. 5.

The application of the principles of artistic adaptation of artificial dentures is in proportion to the deviations from correct form and the construction of gum block teeth is based upon this circumstance. The manufacturers never vary much from the correct proportions, and consequently the placing of the teeth upon the plate can not be wholly wrong, but if it were possible to make them entirely bad some men would do that and then induce people to buy and wear them. A trained eye will readily discern the difference in the size of the sides of the face, that the tip of the nose and the point of the chin are not in line with the center of the mouth; that one side of the upper lip is higher and thinner than the other and that the mouth is too large for the face.

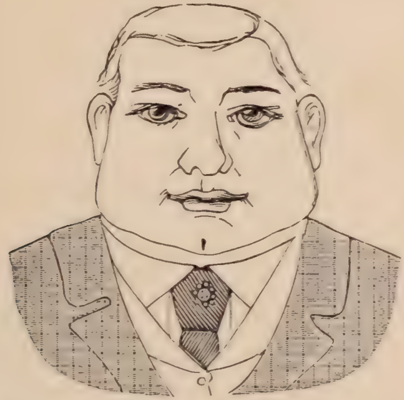


Fig. 6.

When drooping or elevated corners of the mouth are found the line of occlusion of the dentures should be made to conform to the lip line of contact. After these and many other similar points are seen and sketches are made of them, it is better to examine the oral cavity and compare it with the externals before entering upon the study of the profile. When the lips are slightly parted I examine the relative positions of the alveolar ridges to their parting line, and make diagrams like these, Fig. 8 and 9, so that there will be no doubt about either selecting teeth of long or short over-bite or placing them in a position so as to bring about their proper exposure when the mouth is opened. It is often the case that the maxillary ridges are higher on one side than on the other, and while this is the case on the inferior ridge, the superior ridge has a form which is just the reverse; consequently if the denture is built upon these irregularities (Fig. 10) without taking into consideration the lip line of parting, the denture when inserted will have a crooked appearance. But, not satisfied with a superficial examination of the mouth, I seat the patient in the dental chair in a position which will permit me to look up over the chin into the open mouth, see the shape of the bones of the face, all at the same time, and compare the size of the face to the mouth and maxillæ, because neither one alone is sufficient to determine the size of the arch for the denture. From this position depressions in the face that are not common to both sides are more noticeable and a new idea of their contour is formed, the defects glare upon me and the patient, who was considered passably good looking, now appears at a great disadvantage. Subject your best girl to such an inspection, and you will find your idol, clay, and badly modeled.

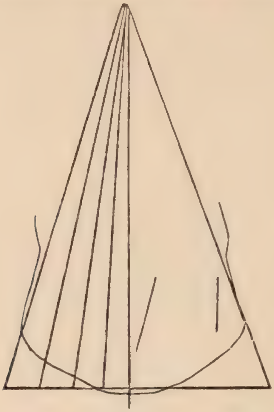


Fig. 7.

The study of the profile is less tedious and the benefits to be derived from it are more easily seen. I invaribly make the anterior surfaces of the superior incisors conform to that part of the profile to which the upper lip belongs (Figs. 11, 12, 13) and take care to have a reminder of the relation of the lower jaw to the facial line, because if the line of occlusion is at an angle of forty degrees to the facial line and I am not aware of it, the probabilities are that the denture when inserted in the patient's mouth will deserve the name of squirrel teeth, because the elevation of the posterior portion of the plate will cause the front teeth to incline inward (Fig. 14).

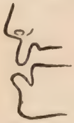


Fig. 8.

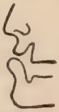


Fig. 9.

It is evident that there can be no truly esthetic prosthetic dental work, without including an examination of the subject, and we know that, as a general thing, this examination is at best but superficial.

No two persons see the same thing exactly alike, even from the same standpoint, and but few have the faculty of seeing all that there is to be seen in any object. Trained powers of observation are essential for this work.

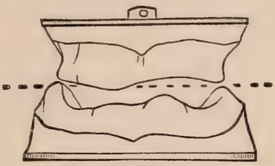


Fig. 10.

The examination completed, the record made, I then sum up the case while all the facts are before me, and *record* the results, so that, with my memoranda, I may at any time take up the work and proceed with confidence.

The impressions taken in the ordinary manner are not satisfactory, and I have made some attempts to improve them. One simple device has given me good results; it is an impression cup, under which is soldered two guides for a bar that has upon one end a half-moon plate, the curved edge of which rises above the rear of the cup, and as far from it as the case demands. Upon this plate wax may be built to fit the roof of the mouth so as to prevent any overflow passing behind, and when the material used for the mould is pressed up into position, the bar may be drawn forward, in order to force the wax or plaster around the necks of the teeth, and thereby secure a correct impression.

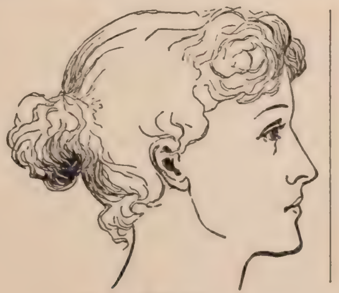


Fig. 11.

I do not overestimate the value of setting casts upon the articulator properly, for it has saved me much time and many failures; therefore I continue to make them very heavy, and then trim them so that they can be fixed at any angle (Fig. 14). It requires no more labor, and if wet paper pulp is used to bank up the impression cup there will be no waste of material. The pulp costs nothing, is better than wax for this purpose, and when used may be thrown back into a bowl, for use again and again.

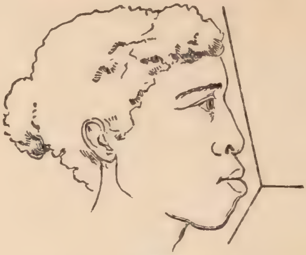


Fig. 12.

When making casts for partial plates, I make sure of flawless plaster teeth by painting the impression with plaster of paris before pouring the mass.

The skill of the carver and the modeler is often needed to bring the cast to proper proportions. Many partial lower dentures are ruined because the cast of the lingual surfaces of the incisors are incorrect. The dentist should know of the line of removal of the impression from the mouth, and when the cast is made, calliper the teeth from the correct side of the cast and carve to proper shape and size. To the uninitiated this may appear to be an unreliable method for securing a well formed cast, but remember that it is a part of the plan adopted by all skilled workmen who re-produce in marble the beautiful forms that have been modeled by the artist-sculptor.

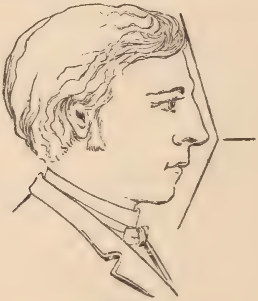


Fig. 13.

The selection of porcelain teeth is a matter I would be glad to bring up for discussion, but it is too extensive to weave into this paper, and their treatment after selection is but briefly mentioned for the same reason. I advise grinding, staining, nicking, filling and irregular setting of the so called plain teeth, and sometimes I leave large spaces between them if the age of the patient or other conditions seem to justify such manipulation.

I use a Dr. Land gas furnace to re-bake and re-glaze teeth that have been ground, nicked and stained. Good results come from the use of china painter's colors—and when a filling is to be inserted it is for the purpose of being seen and I make sure of that.

I would only ring a change upon an often-sung theme if I went into the details of setting teeth so as to meet the requirements of a flat or sharp face, for a straight, thin-lipped mouth, or explain how the expression of the face may be made Satanic by the insertion of dog teeth, but such matters are more suited to the college lecture room.

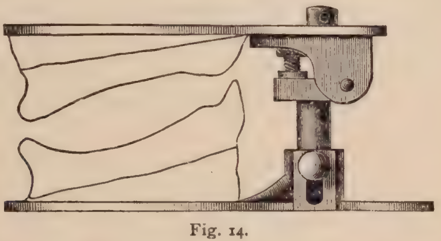


Fig. 14.

In the restoration of the contour of the face the sketches will be found to be of more value than the written notes. With all these reminders of the conditions in the laboratory it is a comparatively easy matter to decide how the work is to be done. Sometimes extreme measures are to be followed, and under certain circumstances I will not hesitate to use the knife to cut away an adhesion, clip a frænum, or make an incision if the plan adopted requires it.

It is sometimes necessary to go clear away from the denture to build up a depression, and in a late case where there was a large sunken place on the left side of the lower jaw by the bicuspidati, although there were no teeth missing nearer than the second molar, I restored the face to form by connecting plumper and plate with a gold bar, much to the satisfaction of the patient.

The field for the practice of artistic prosthetic dentistry has been a narrow one, confined in its best features to continuous gum work, but it need not be so in the future, for while I admit that there is as yet nothing to equal continuous gum work in appearance, its weight, expense and the difficulties of production bar it from general use. Zylonite, celluloid and pink rubber can be wrought into very presentable dentures, and by much labor I have overcome some of the objections to their use with single teeth. The loosening of single teeth can be prevented by binding the teeth together with platina wire. The labor of modeling the gums in wax, carving them after hardening and the repolishing may be saved by following methods which I will mention.

In order to produce at once a strip of wax shaped like the gums I have carved four moulds in plaster, bordered them with strips of metal and surrounded each mould and metal border with cement—so as to hold them in place (Fig. 15).

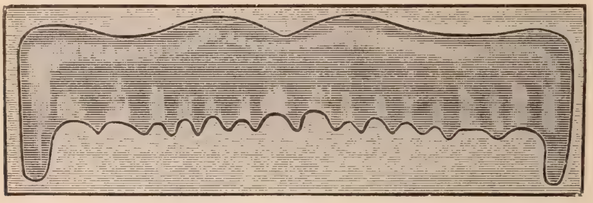


Fig. 15.

In these moulds I press wax which the metal border trims to shape. The elevations, depressions and festoons of the gums are reproduced by the mould so that when the teeth are placed in position and the inequalities of the cast are filled out, the moulded wax may be placed in position by commencing to fit it on the median line and adjusting the parts at the necks of the teeth. If the teeth are unusually large, stretch the wax; if small, crowd it back to fit the spaces. The moulds are finely stippled so that the surface of the plate when finished, does not have little pits in it like those seen, when the stippling is done on the wax model or after the plate is carved.

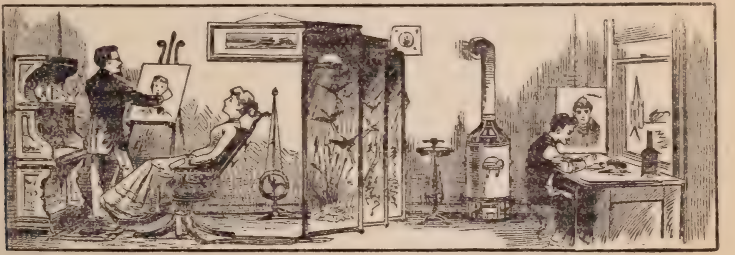
A method for accurately reproducing the model when carved or moulded has puzzled the dental profession for many years, but now any rubber, celluloid or zylonite plate which has carved and stippled gums, highly finished on all sides, may be placed in a patient's mouth within five minutes after removal from the flask. The work and expense to prepare the models are but trifles, and after the vulcanizing or stamping is done no lathe work is required.

Make all the changes in the impression instead of upon the cast, have it heavily electro-plated with copper or nickel; electro-platers charge me five cents for each copper plate.

If the impression is of beeswax, the electro-plater will prepare it for the bath, if of plaster paris I advise hot waxing, polishing and finally gilding by laying on gold leaf. If you are not accustomed to laying gold leaf, you may have the idea that it is expensive and will require skill to do this part of the work. The expense is nominal, the labor a trifle and the skill ordinary. Forty cents will buy a book of gold which will cover many casts. The only tool necessary is a gilder's tip with which to lift the delicate leaves. If modeling composition is fresh and waxy it will "take" the plumbago like beeswax, but if hard and dry, it also must be gilded.

After the impression has been electro-plated, I fill the shell with plaster and make a die that is better than solid metal for my purpose, because there will be no danger to the plate in removing it after the hardening process. When the wax model is finished ready for investment, place it upon the metallic die and have the carved surfaces heavily electro-plated. Then flask the case in the usual manner, and when the lingual surface of the flask is removed, cut a broad shallow waste gate at the rear only, and electro-plate its entire plaster surface.

When the denture is removed from the flask it will be covered entirely with a thick sheet of copper, and after that is peeled off you will find in their minutest details, reproductions of your cast and model so that if the waste is cut away with a sharp knife, the plate may be placed in the mouth at once.



DISCUSSION.

Dr. Dorrance of Ann Arbor, in opening the discussion said that we have had before us an illustration of the fact that the gentleman who prepared the paper has had an artistic training, and also an illustration of the additional fact, which has been claimed for some years by the profession, that a dentist needs to be an artist, to have his fingers educated to work with brains, and in fact to have several other qualities that are not usually afforded. Dr. Comstock had certainly given the profession some new ideas. He had suggested some simple plans which may be carried out. It was lamentable to contemplate the fact that almost the entire body of the profession at large were ignorant of the subject from a lack of care. He would claim that the dentist, whether he has to practice this branch of the profession or not, should have sufficient knowledge of the subject to intelligently direct those into whose hands he puts his work.

Dr. W. W. Allport of Chicago: These diagrams represented here, only show the necessity of what I have contended for, for years, and that is that men should take up this department of dentistry as an art, as a painter or sculptor takes up his business as an art. Now, we are told that all dentists should learn to make these diagrams and these portraits, and that they should make their artificial substitutes to conform to the proportions, the curves and the different lines that are carried out in the natural face. We are told we ought to do it, and if we do not do it ourselves we should be qualified to direct somebody else to do it. I want to ask each one of the gentlemen here to-night to ask himself this question, "Can I do it, or can I ever learn to do it as an artist?" And we know that there is not one man in twenty that can do it; we know that men who study law, medicine, or theology can never become artists and learn to do what this gentleman has placed before us to-night. Therefore, I say, men should make this department of our practice a specialty, and should follow it; they should have their own offices; they should do their own work in their own way as an artist or painter would do his work.

Dr. L. P. Haskell of Chicago, suggested the feasibility of Dr. Comstock preparing for publication a work embodying in a concise manner his ideas on the subject, so that a copy of it could be placed in the hands of every dentist in America. Some dentists could arrange the teeth satisfactorily as regards the contour of the face and lips, but it was not an easy matter to tell students how to do it. He thought it would be conferring a great favor on the profession if he would proceed to produce such a work.

Dr. Comstock said that with regard to teaching artistic adaptation, he would say that it could be systematized and taught to dental students. He believed that every principle that was applied to art and could be applied to dental practice, had been represented in some of his articles on the subject. He had searched to find an additional principle to be demonstrated. As far as his knowledge is concerned, he believes the matter could be so arranged as to be taught in dental colleges.

The Secretary, in the absence of the essayist, read a paper on

OBTUNDING SENSITIVE DENTINE, AND CONTROLLING PERIDENTAL INFLAMMATION BY ELECTROLYSIS.

BY D. F. McGRAW, MANKATO, MINN.

With all the wonderful advancement that has been made in the mechanical department of our profession in the last decade, it would seem as though an important feature of every-day practice had been entirely lost sight of, that in our haste to become proficient mechanicians we had entirely forgotten that we were dealing with human beings, and in the performance of these wonderful feats of dental skill were causing untold suffering, and doing nothing to alleviate them.

Many different agents have been brought before the profession whose merits as obtundents of sensitive dentine have been heralded far and wide, but when placed under the critical test of actual demonstration have proven failures, except in so far as to draw hard-earned dollars out of the pockets of the over-zealous members of the dental profession.

This new system of obtunding dentine, and of controlling peridental inflammation, has this feature in its favor: To begin with, it is not patented, nor are the drugs and instruments confined to the control of one house or one combination. You who are interested enough to make the necessary outlay can go into the open market to purchase your outfit and supplies and not feel that you are being robbed.

The next feature of importance is, that it is absolutely safe, and no evils can result from its use.

The third is, that it performs all that is claimed for it.

With the discovery of the anæsthetic properties of cocaine, its virtues were heralded throughout the world; so great was the stampede for it that the manufacturers could not begin to supply the demand. The consequence was, the price went to a point that only those in high standing in the profession, from a financial standpoint, could touch it. It was shortly discovered, however, that when it allayed the pain in one sensitive tooth, there were ninety and nine that failed to respond to its soothing effects, and the profession reluctantly came to the conclusion that they had again been made the dupes of designing manufacturers.

This method that we shall present to you at this meeting, to gain insensibility in teeth, is the following :

To a twelve per cent solution of cocaine add an equal amount of absolute alcohol, making a six per cent solution of cocaine in alcohol. In connection with this I use the galvanic current, varying the power as the needs of each case may indicate. The method of application is as follows :

First apply the rubber dam; wet a pledget of cotton in the solution, placing it in the cavity of the tooth, pressing the point of the positive pole on to the cotton and the negative pole, with sponge attachment thoroughly wet, to the cheek, turning on the current. Rarely will more than four cells be necessary, if the battery is in good working order.

An application of three minutes, with an interval of three minutes and then another three-minute application, are sufficient in the majority of cases, although I have to occasionally make the third application, then dry the cavity thoroughly and commence excavating. My deductions as to the physiological effects are as follows : The galvanic current acts as a vehicle for conducting the medicinal agents; the cocaine current anæsthetizes the odontoblastic cells and the pulp; the styptic properties of the alcohol acts upon the dentinal fibrils, they being of an albuminous nature, causing contraction and increased density and firmness.

My reasons for drawing these conclusions are these :

I have found that the most sensitive teeth can be obtunded ; that after a certain period of rest sensitiveness returns, but never to that degree that existed before the application of the obtundent. Therefore, I conclude that a change has taken place in the dentinal fibrils, which I maintain is due to the styptic properties of the alcohol, and not to the electrolytic action of the galvanic current. Another reason is, that a tooth in which the pulp is devitalized is a non-conductor of the electric current. A tooth which had been extracted was subjected to a twelve-cell current of a freshly charged battery and proved an absolute non-conductor.

In the treatment of peri-dental inflammation we have to use a stronger current, for this reason : It is well known that a strong current will tetanize the vessels, causing a diminished flow of blood to the parts, thus lessening congestion. The same current, longer continued, will cause electrolytic decompostion. These are laws of galvanic electricity that are incontrovertible. The medicinal agents that I use in all cases of peri-dental inflammation and the blind abscess are as follows :

A saturated solution of chloride of sodium, seven ounces, tincture of ergot, one ounce. In the chloride of sodium we have one of the constituents of the blood, where it keeps the fibrine and albumen in solution. The tissues in an inflamed condition lack this element, which we supply artificially. In the tincture of ergot we have a drug that stimulates contraction of the blood vessels, causing anæmia. Taken together we have here a combination which decreases the flow of blood, reducing congestion, at the same time furnishing an element which is lacking and upon the presence of which normal conditions depend.

The treatment of blind abscess requires stronger battery power, in order that we may get the full benefit of electrolysis.

Dr. Weeks informs me that he has had remarkable success in using this method in removing pulps. My experience in this line has been exceedingly limited, having used it in only two cases. The first was partially successful and the second was a complete success. The failure of the first, I attributed to the congested condition of the pulp. I would recommend getting the pulp in a healthy condition first, as I find that in cases where we have an inflamed condition, the full anæsthetic effects are not as easily gained as where the pulp is normal.

In conclusion, I would say, that we have here a compound that is willing to do our bidding, fulfilling all requirements in the most satisfactory manner. The satisfaction that our patients will evince will compensate in more ways than one, for the time spent in thoroughly investigating it and making ourselves masters of the situation.

You may occasionally find a nervous person who objects to having a battery used around the mouth for fear of being "shocked," but it is easy to calm their fears by an intelligent explanation and the results that are to crown your efforts by this method of treatment.

The President arose and said: Gentlemen, I thank you for your full attendance, for your excellent papers and discussions, for your universal courtesy toward one another while doing so, and for your generosity and forbearance with your Chairman. (Great applause.)

The Society then adjourned.

CLINICS.

WEDNESDAY MORNING, FEBRUARY 6, 1889.

J. B. VERNON of St. Louis.—A case of permanent bridge-work, extending from the lower first bicuspid to third molar inclusive. This was an unusually favorable case for a typical piece of bridge-work, and it promised to be very useful.

C. THOMAS of Des Moines, Iowa.—Porcelain filling, which was made in the following manner: The cavity, on the labial surface of a superior cuspid, was first prepared with under-cuts, and a thin piece of platinum burnished into it. The platinum formed a matrix, which was then removed and filled with porcelain body and baked. The portion of the filling extending beyond the enamel into the neck was colored to harmonize with the gum. The platinum was ground away on a bevel, so as not to show at the cavity margin, and then it was set with cement.

S. G. PERRY of New York.—A filling of Watts' crystal-gold, using hand mallet and Weber-Perry engine and mallet.

T. E. WEEKS of Minneapolis, Minn.—Original method of investment and soldering.—After assembling the various parts together, ready for soldering, when setting any of the porcelain crowns with a band or ferrule, Dr. Weeks coats the porcelain tooth with oil, and wraps the piece in *moist* asbestos felt foil, leaving exposed only those parts to be soldered. By this means the piece may be immediately soldered, without waiting for the investment to dry; furthermore, the porcelain is better protected from sudden changes in temperature than in any other method of investment, because the asbestos is so excellent a non-conductor. This investment is also applicable in those cases where opal glass or jewelers' white enamel is used in joining Bonwill and other crowns to the bands or collars.

J. W. WICK of St. Louis, Mo. Two gold fillings on mesial surfaces of central incisors, using a hand mallet himself, with a continuous stroke similar to electric mallet.

DR. LOUIS OTTOFY of Chicago.—Implantation.—The patient was twenty-five years of age and of good health. Four years ago the superior left first molar had been extracted, and in the space between the second bicuspid and second molar, there was sufficient vacancy to implant a bicuspid. A flap of the gum was made by cutting this tissue in a semi-circle from the second bicuspid to the second molar, and being raised from the bone it was held in that position while the socket was prepared. This was made with the Younger, Walker and Ottofy trephines, socket-knives, and crib-knives. The tooth, which during the operation was kept in a solution of bichloride of mercury, one part to one thousand of water, was frequently inserted and the socket made as near as possible to fit the root of the tooth. Some difficulty was experienced by cutting down the septa of bone, which at one time separated the roots of the molar (previously occupying this space) from each other. The tooth once in place, and properly articulated, after perfect sterilization of the tooth and of the cell prepared for its reception, was held *in situ* by a cap of gold and platinum plate about thirty-three standard guage. The retention cap covered the implanted tooth, and each of its neighbors; it was cemented in place with oxyphosphate cement.

THURSDAY MORNING, FEBRUARY 7.

DR. C. N. JOHNSON of Chicago.—Gold filling.—A superior right first bicuspid, having a distal cavity extending into the fissure of the crown. The filling was introduced with the usual pluggers, and the aid of the hand mallet. The Brophy matrix and the Ivory clamps were adjuncts during the operation. The cervical border was protected with Pack's semi-cohesive gold rolls. In the remainder of the cavity the gold foil used was previously annealed.

DR. E. H. ALLEN of Freeport, Ill.—Gold filling, using electric mallet.—Two cavities were filled with No. 4 cohesive foil, folded until it would have the thickness of No. 64. The cavities were situated on the distal surface of the superior left cuspid, and the mesial surface of the superior left first bicuspid. The operator annealed all the gold used in these cavities, and hence the margins of the cavity, as well as the central portions, were filled with cohesive gold.

DR. C. W. LEWIS of Chicago.—Gold filling, Herbst method.—A large cavity in the inferior left second molar was filled with Pack's crown pellets. They are used soft for the commencement of the operation, the soft pellets having been placed into the cavity and covered with a pellet of cotton, the mass of gold is burnished into all of the inequalities of the cavity and especially to its margins. In this way a perfect adaptation of the gold to the margin is obtained. The central portion of the cavity, being largely exposed to mastication, was filled with the same gold, but in a semi-cohesive condition, and the surface was also finished with the same gold, cohesive, and by the aid of the mallet. All of the burnishers are of steel and are used with the engine and by hand, while the instruments used for filling the central and exposed portions of the cavity are those of the usual make and patterns.

Dr. Marvin E. Smith of Chicago.—Gold filling, using Snow and Lewis plugger.—This operator filled a compound cavity, extending over the crown and distal surface of a superior right first molar. No. 4 gold foil was used in a soft condition while in proximity to the margins of the cavity, and annealed when in the central and exposed portions. The condensation of the gold throughout was made with the Snow and Lewis plugger.

Dr. E. M. S. Fernandez of Chicago.—Oxyphosphate cement filling.—After the cavity has been prepared in the usual manner for the reception of a plastic filling, the tooth and cavity being perfectly dry, the assistant mixes the cement, at first quite thin; this is then pressed into the cavity with ivory or wooden instruments. Thicker mixtures of the mass are then introduced and with it the thinner portions displaced and pressed out of the cavity. Continue in this mannner until finally the filling is finished with very thickly mixed cement. The surface of the filling is then dried with steel instruments and the powder of the cement. In a few minutes the powder from the surface of the filling should be brushed away with a camel's hair brush, to be followed by thoroughly rubbing it with cotton dipped in sandarac varnish. As soon as the varnish is dry, the rubber-dam can be removed. All of the instruments used should be scrupulously clean, and the filling should be finished in such a way that there is no cutting away or polishing of the surface of the filling, the latter should be polished and made perfectly smooth by the pressure of the instruments used.

Dr. E. A. Royce of Chicago, inserted a gold filling in the inferior right first molar, mesial surface, using Abbey's non-cohesive gold in cylinders prepared by himself. The cylinders contain one-third to one-half sheet of gold rolled very tight, and are used principally in starting and filling the body of the cavity. Gold in tape form or loose pellets for the upper and masticating surface. Rapidity and ease of insertion, together with perfect adaptation, is claimed for this method, which the operator well demonstrated.

Dr. C. Thomas of Des Moines, Iowa, finished the porcelain inlay inserted at the previous clinic. The shade of color might have been a trifle closer, but the operation, taken altogether, was the best of its kind yet seen by the reporter.

Dr. J. B. Vernon of St. Louis, Mo., completed the bridge piece begun on Wednesday for Dr. Cormany. It proved a perfect piece of workmanship, light and cleanly. Dr. Vernon also exhibited a set of instruments for driving on bands, crowns, etc. These instruments consist of steel handles, bent at different angles, with socket at the tip for holding a boxwood plug. A device for holding and sifting plaster was also shown by the same person, and it has the appearance of being a very useful adjunct to the laboratory. The dies for the hollow gold crowns which composed the bridge piece were also made after a peculiar design of his own.

The removable bridge, specimens shown by Dr. T. S. Waters of Baltimore, Md., are held in position by means of springs, and offers advantages that will amply repay investigation. In one case, the use of split posts in the roots of several teeth, as a retaining force exhibited one method of attachment. Other cases, where live teeth were present, a gold cap with a half round groove at the side, in which fitted springs made from half round gold wire, showed another method.

J. W. Wassall.—Canal-filling.—The canals of two lower molars were filled with gutta-percha in the usual manner, except that in the canals of the anterior root, being smaller in calibre, the chloro-percha solution was followed by a tapered gold wire filling instead of gutta-percha cones. There is no advantage claimed for the gold wire other than that it can be more certainly pushed to the extremity of the canal carrying with it the liquid gutta-percha. By this method the necessity for enlarging canals with drills is avoided. The broaches used in this clinic were filed out of platinum gold wire (standard gauge No. 24), a suggestion of Dr. H. J. McKellops.

The operation of Dr. Wick of St. Louis, the restoration of contour in the two superior central incisors, was open to inspection, and well bore the closest scrutiny.

J. G. Reid of Chicago.—Demonstrated the use of copper amalgam in filling two cavities; one situated on the mesial surface of an upper right first molar, and the second cavity on the distal surface of adjoining bicusped. Immediate separation of the teeth was accomplished by the use of Dr. R. B. Winder's separator. The ease with which this appliance can be adjusted, the rapidity with which it does the work at a minimum expense of pain, seems to recommend it at once as being an instrument of general utility.

(See cut and description under the head of "New Appliances.")

A. H. THOMPSON of Topeka, Kas.—Gum colored porcelain, inlay filling.—Cavity on labial surface of neck and root of upper pulpless cuspid. Two pieces of porcelain gum from block teeth were fitted in cavity, the outer edges beveled to fit underneath. The pieces were fitted together in the median line to form the proper contour. The inlays were then colored to correspond with gum and tooth and set according to the method described in his paper.

DR. T. L. GILMER of Quincy, Illinois, exhibited gold crowns, made by himself, which are telescoped over platinum bands, made to fit the root exactly. Also a combination crown of platinum and Weston's metal; and of gold, porcelain and Weston's metal.

The attention of the reporters of THE DENTAL REVIEW was called to the mal-position of the various operators, while at the chair. At clinics, the operators may be partially excused, because of unfamiliarity with the chair and the necessarily altered condition of the surroundings. If more attention were given to this subject by the operator in his own office, possibly the average life of the dentist, now about 40 years, might be considerably increased. Defective optics, round shoulders and pulmonary diseases may become less frequently the ailments of the dentist. One operator was in a position, wherein it was out of the question for him to allow a free passage of the respired air, into and out of one of the lungs, while the muscles of the other, were in a continued state of tension, thus preventing the interchange of the gases in the remote parts of the lung tissue, because the free mobility of the lung had been interfered with. Another was observed to throw his entire weight on one foot, causing the muscles of one leg to support and balance the body, when a slight elevation of the chair would have prevented the unnecessary exertion. However, he soon obviated the necessity of using the other leg, by leaning with his elbow on the patient's stomach. One operator, standing at the side, a little to the front of the chair, had much difficulty in securing proper access to manipulate in the cavity of a lower tooth. It necessitated the extension of the arm, into a position consiting of angles at the shoulder, elbow, wrist and finger joints; the operator's appearance was painful to the observer and there must have been unusual fatigue to the operator—lowering the chair and standing behind and a little to the left of the head-rest would have been a pleasant position to enable the operator to work with ease. We merely call the attention of dentists to this subject for the purpose of having them give some thought to it, and by a slight consideration of it, to remedy any errors of this kind, of which they may be conscious.

The practical bridge-piece inserted by DR. PARR of New York City, although the principle is good, did not do the operator justice. The case was a bad one, and a faulty articulation made matters a little worse. We hope to see DR. PARR under more favorable circumstances.

DR. HARLAN removed serumal deposit from several inferior incisors and DR. BLACK wired the same loosened teeth, using gold wire and figure of 8 suture.

NEW APPLIANCES.

Dr. E. M. S. FERNANDEZ of Chicago.—Improvement on the Suspension Dental Engine.—This improvement consists of separating the hand-piece from the speed-knob and inserting between them S. S. White's duplex spring connector, a tubular arm through which a shaft is journaled, one end bearing on each extremity. If a section was made it would show internally, S. S. White's hand-piece, connected with duplex spring and shaft. The latter has one bearing at each end and connects with the speed-knob. *Externally* is the hand-piece connecting with the duplex spring cover, the tubular arm and the speed-knob. The top pulley (for the purpose of suspension) is suspended by a cord run through a pulley attached to the ceiling, another pulley is attached to the corner of the window frame, the cord passing over this, down to the spring or weight on the window sill. When the engine is not in use the arm is hung on a hook on the wall or window sash.

DR. GEO. W. WHITEFIELD of Evanston, Illinois.—Instantaneous break, on dental engine.—The engine exhibited has a great range of motion, can be moved out of the way readily, and by the sudden break of the revolutions of the instrument, can be stopped almost instantaneously, enabling the operator to make a few revolutions only, at a time, if so desired. The break is set by the foot of the operator. The speed is all the way from 600 to 7,000 per minute. The great range of the arm, makes it possible to extend the hand-piece to two, or even three chairs, by swinging the arm. In dental colleges, this feature of the apparatus may be of considerable value.

The burs are cut in a way which prevents any but the cutting edge to touch those portions of the tooth which are being cut, hence friction is obviated and heating of the tooth, even when the instrument is revolving rapidly, partially or wholly obviated.

The Hahn Duplex dental engine and pneumatic mallet, combining mallet and engine in one, was also on exhibition. The engine arm is readily disconnected and when this is done the engine operates only the mallet, by keeping in motion an air-pump, the air being transmitted through a rubber tube to the hand-piece. The action of the mallet is similar to the action of pneumatic mallets. When the engine arm is connected and the mallet arm disconnected, the apparatus is then simply a dental engine.

The root-dryer of DR. J. H. WOOLEY of Chicago, was also on exhibition and its practicability fully demonstrated.

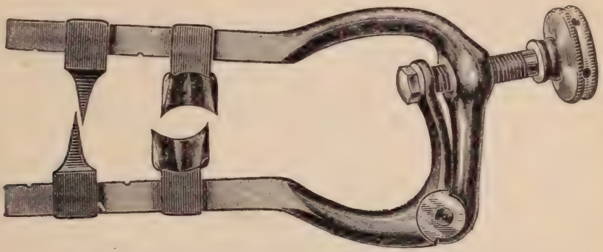
An apparatus for disinfecting instruments was exhibited by DR. C. J. PETERSON of Dubuque, Iowa. It comprised a small copper tank for heating water to which a disinfectant had been added, and a wire gauze tray with handle, with which to submerge the instruments. The inventor claimed many advantages for the apparatus, viz.: Absolute cleanliness and thorough disinfection; hot water always ready at a minute's notice, in softening gutta-percha easily without fear of over heating, and finally the influence on the patient who sees all the instruments submitted to a bath before using upon another person.

A beautiful specimen of porcelain inlay, set in gold, was exhibited as the work of DR. A. W. HOYT of Chicago.

DR. CALL of Peoria presented a seamless platinum tube for use in Dunn's Medicinal syringe.

A shield of metal about two inches in diameter, on which a piece of emery cloth or paper is laid, the two being placed on a mandril and used with the dental engine, was exhibited by Dr. ——— ——— The device used for sharpening tools, is simple and convenient. Similar shields have been used for years with the dental engine for the purpose of supporting sand-paper and emery-paper discs when used in the mouth. The paper thus supported by the shield answers the purposes of an emery wheel, it is, however, thin and flexible.

Dr. J. J. R. Patrick of Belleville, Ill., exhibited a combination tool for preparing gold screw plugs and posts, and the making of gold broaches, which he cannot get on the market any too soon for those dentists who practice gold crown work, or, in fact, any operation requiring screw posts. The instrument is shaped like an ordinary pair of pliers, but upon its upper surface is inserted a hardened steel knife-edge tapering groove, by which the gold wire may be shaved down to a fine tapering point; between the jaws, on either side, are two screw plates, in which is laid the wire, already trimmed in the shaper, when with a reverse motion and gentle pressure on the handles, the wire is withdrawn and shows a fine screw thread cut on its surface. A cutting jaw a little behind the flat portion of the pliers enables one to cut the post to the required length. In the tip of the jaw is a set screw, and at the side of set screw is a small chisel blade standing at an angle to the under surface, and a small opening in this under surface gives an opportunity for passing in a fine gold wire which may be barbed with the chisel above. We are really at a loss to know if the above description fully enumerates all the points of this wonderful tool. It must be seen to be appreciated.



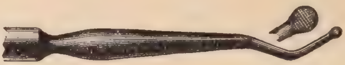
Dr. R. B. Winder's Separator and Rubber-Dam Clamp.

The above cut represents a new appliance designed to be used either as a separator or a rubber-dam clamp. Its chief advantages are self-adjusting, easily and quickly applied, and when in position is not in the way of the operator.

The jaws of the clamp and also the wedges for separating are interchangeable, so that the operator can select such sizes as are suitable for the case in hand.

Dr. C. F. Hartt of Chicago, gives a rubber handle to pluggers and excavators by coating the steel with rubber and then vulcanizing.

Dr. E. A. Royce of Chicago, showed a new plugger point which terminates in a serrated ball as per cut, instrument made by S. S. White.



Dr. Dunn has greatly increased the efficacy of his medicinal syringe by means of a spring guage attachment, by which the rubber bulb can be compressed and drops measured, which also prevents the liquid from being drawn back into the syringe.

Byrnes' Engine Plugger.—The instrument has a set-nut for giving a light or heavy blow. Instantaneous increase of the blow is had by pressing the point of the instrument on the filling. To stop the blow altogether push the latch-pin in, at the same time press upon the point of the instrument. While the instrument is pressed back release the latch-pin and it is locked out of gear. Pressure upon the latch-pin will immediately throw it back into gear. In operating the instrument, leave the latch-pin perfectly free to obtain the best results.

Should the engine run backwards it will run the top nut off; to catch it up again it will be necessary to throw the instrument out of gear, and run the engine forward.

By allowing the end of mandril to come out as far as extreme end of clasp there is no trouble in getting hand-piece to grasp the mandril. Snow and Lewis points fit the plugger.

Dr. W. H. Taggart of Freeport, Ill., exhibited a new arrangement of the suspension engine and a device for shaping the ends of roots for crown-bands. The engine is suspended from the ceiling in such a way as to avoid the use of a fusee to raise and lower it to bring it within the proper range for the operator, as the hand piece has a range of four feet in every direction before there is any necessity for a change in the height of pulley-head. This is accomplished by having the pulley-head, which is attached to a Shaw arm, or Hood & Reynolds arm, or S. S. W. cable, balanced in such a way as to cause the belt to always come on the pulley at such an angle as to do away almost entirely with guides so that the only revolving part of the engine is the pulley and cable. No noise from the rattling of guides. In balancing it in this way there is no drag to the hand piece and absolutely no weight except that of the hand-piece.

The engine is intended to run by an electric or other motor, placed in an adjoining room. Dr. Taggart has his run by 60 feet of belt. The longer the belt the smoother it runs. In this way all the noise can be confined to an adjoining room, and as the engine itself runs absolutely noiseless we have the perfection of a power engine in the operating room. This can also be run by a foot treadle the same as any other suspension engine.

The root-trimmer consists of a pin cemented into the root which acts as a bearing on which the trimmer proper revolves and also give the direction in which the shoulder is to be trimmed.

The trimmer consists of a hollow flexible drill made by having a series of special shaped steel or other spring-lips set in a circle the only object of these lips is to hold the abrasive powder, which does the cutting, in contact with the outside of the root. The flexible springs are intended to follow the general outline of the root and to take off just enough of the root to make the sides parallel and not to cut a decided shoulder.

The general outline of the root is preserved and the same instrument will parallel the sides of a round, oval or pear shaped root without taking off any more material than enough to get the root properly shaped.

Another advantage is this — as the root is trimmed entirely in the direction in which the pin is set, in bridge work it is only necessary to set the two or more pins in the different roots parallel with each other, and the roots will be the same when trimmed, thus overcoming any difficulty in having the bridge go to place.

THE BANQUET.

The banquet was the crowning feature. It was well attended. After all the members and invited guests had filed into the large dining-room, and taken their seats, Dr. Noyes invoked divine blessing, following which came the feast. The next thing in order was the ventilation of the post-prandial eloquence that had accumulated in each bosom, and the President arose and spoke as follows:

Invited Guests of the Chicago Dental Society: We bid you a cordial welcome to this our banquet board, that we may for a few hours more enjoy your society, and give us an opportunity to express our heartfelt thanks to you for your many generous efforts toward making our twenty-fifth anniversary meeting a success. The presents that you have brought to this, our silver wedding, are priceless, and will be treasured by each member. In your wanderings around our city you have doubtless seen many things of interest of which we are justly proud. It is not my purpose to boast to you of our tall buildings, our street railways, our tunnels and bridges, our beautiful parks and boulevards, and our Mayor (Applause), but there is one thing of which I will boast—that is the great love the Chicago dentist has in his heart towards every progressive dentist throughout the land. (Applause.) If "brevity is the soul of wit," I think I have considerable wit. (Great laughter.)

The President: The first toast of the evening reads like this: 'Hereto we have invited many a guest such as we love." I will call upon Dr. T. E. Weeks, of Minneapolis, Minn., to respond to this toast.

Dr. Weeks said: *Mr. President and Brethren of the Dental Profession*—I have not language to express the feelings that possess me at this time in being honored with an invitation to respond to that toast. Chicago is a great city. This is a great meeting; it is a great attendance; it has a great President. (Laughter and applause.) I think I voice the sentiments of every visiting dentist when I speak of the reciprocal feeling, of the pleasure that your President, Dr. Swasey, took of notifying us to hear him. I do not think the love of the Chicago dentists is any bigger than that the visiting members have for the Chicago Dental Society. I know a few of us from the State of Minnesota have a warm feeling for Chicago. We are attracted here very often by numerous good things that your President spoke of. I suppose he enumerated all the attractions. (Laughter.) Minnesota is a great State in a good many ways, and it has good dentists, and they are pretty good fellows, and they would like to have the opportunity to entertain as they are being entertained now. There are a good many attractions aside from dentists. I call to mind that at our table the conversation turned on shooting and hunting. Dentists, as a rule, are fond of that kind of sport. I have the best authority for the story I am about to relate in regard to the kind of shooting we have in Minnesota. We have a peculiar breed of ducks up there. The story, as related to me, was as follows:

The speaker said he was out south of the city one afternoon strolling along to see if he couldn't shoot a duck or two. There were some black heads flying over him and he was fortunate enough to wound one. You all know that when the sun is in the right direction you see all that is beneath the water on a little elevation, but the wounded duck fell into the water, and it was that particular brand of ducks which dive. He said he kept watching the place where the duck went down, and he suddenly discovered the duck swimming toward him, and in the direction where there were two points of comparatively solid earth that approached each other within about two feet. He watched the duck swimming towards these two points of land. He got there before the duck did and threw himself prostrate on the ground, put his hand into the water, the duck swam into his hands, and he put it in his bag. With that kind of accommodating game to offer you as an inducement, in addition to the hearty good fellowship that we may extend to you, we hope that each and every man will honor Minnesota with a visit. I do not think you had all better come at once, there may not be ducks enough to go around. (Laughter.) But seriously, gentlemen, while on this phase of the subject, we do expect to have a meeting of the Minnesota State Dental Society next summer, and in behalf of the dentists of our State I extend a cordial and personal invitation to you all to come and meet with us. The meeting will be held in Duluth, and I assure you that everything will be done to entertain you that the poor people of Minnesota can do. I think you would have a good time, as we predict a good meeting.

The occasion here has been one of the most enjoyable to me I have ever attended. It has been my good fortune to attend a number of dental meetings in the last few years; but there are some features of this meeting that have struck me forcibly and impressively, and I wish to speak of them. It has been a meeting for business. There has been no opportunity for politics or wrangling, of any kind, and we have got all the good out of the meeting that we could get. (Applause.) I certainly think the class of papers that are introduced in dental meetings now are by all odds an improvement on those of a few years back. As far as good fellowship of the meetings is concerned, that certainly is not growing less. I, for one, am proud to say that the best friends I have in the world are dentists. (Applause.) I would not have it otherwise. I feel it is an honor to be able to say that. It is an honor for any one to say that the dearest friends he has in the world are his confreres throughout the country, who are engaged in the same line of work that he is. I think we are growing closer and closer together as we go on. I believe we are doing a good work, and the profession as a profession is rapidly improving. While I do not think I could talk connectedly all night, yet I am "full" enough to do so. (Great laughter.) I will not occupy any more of your time as I know the committee must have other good things to offer. I thank you for all the courtesies I have had, and especially this last and greatest of all. (Applause.)

To the toast, "The Pioneers of the Profession," Dr. W. W. Allport of Chicago, made the following response: *Mr. President and Gentlemen:* I am very glad to be called upon as a young man to respond to this toast, as had I been addressed by the Chair as an old man I would not have been proud. To speak of the pioneers in the dental profession, it can hardly be that you mean *me*, Mr. President; I am not even one of them. The pioneers are nearly all dead. If my memory refers back to the time I first practiced, I think of those old pioneers who commenced when we had little literature; there are but few, especially such men as Harris, Townsend, Gunning, Harwood, Keep and others, who had given us the commencement or foundation upon which we have established our literature and practice, and I was then a young man. I remember attending one of the largest meetings ever known in the world amongst dentists a few years after I had entered practice. It was held in a little hall in New York city. There were a little less than 200 members present, and these men were gathered from all over this broad land from one part to the other. They comprised the best men of the profession at that time, and perhaps the best men in the world. Now, here to-night I see before me men fully as able as those we had at that time, and nearly all gathered from a small section of country. Whilst these gentlemen laid the foundation for our practice and literature, the men here this evening have come along one after another working in the interests of the profession; and while I know I look old, I can hardly say I feel old. I am as young in feeling as any other member. (Applause.) That is, I feel just as anxious and enthusiastic in regard to the future of dentistry now, and more so than I did at that time. At that time we had but one dental college in the whole land, and we kept growing and growing, but during all this time we, the older practitioners, whilst growing old and gray, I believe, without exception, were just as young and enthusiastic for the future of our profession, and looked forward with great pride for its future advancement; because we knew more what we ought to be and what intelligent people expect of us by and by. We feel the enthusiasm; we know the American spirit of what we ought to be will be, and are going to be sometime. With the number of colleges we have, with all the dental literature at our disposal, the object of every man in practice should be never to grow old, but always feel young, and be a pioneer in the true sense of keeping abreast of all that is going on, gathering the best thoughts pertaining to his profession from all sources, and if we keep young and steady, keep looking out for the grand future that awaits us, there is no reason why we should grow old in spirit. I have said enough. I thank you Mr. President. (Applause).

To the toast, "The Dental Press," Dr. W. X. Sudduth of Philadelphia, arose and spoke as follows:

Mr. President and Gentlemen: A serious subject. This is a subject that can not be discussed in a way that would be a fitting accompaniment to an after dinner speech. I cannot take up the subject without feeling impressed with its seriousness—without feeling impressed as I look over the faces of those before me, and feeling that we are building monuments; that we, here assembled, are the men who are to make the dental press what it will be in the future, not those who stand at the helm, but those who fill its columns. Our dental journals can not be, or never will rise, higher than the source from which they receive their supply. I have been most highly entertained at this meeting; the scientific character of the papers presented have filled me with pleasure from the first to the last. As mentioned by Dr. Weeks, there has been such a marked advancement in the character of our papers and dental literature that no one can look over and note the advancement that has been made in our journals without feeling that there is a grand stride being made in this direction. As I look into your faces and see the expression of enthusiasm that has attended this entire meeting, I feel highly encouraged to pick up and go on with this good work, and I know my confrères of the press, several of whom are present with us here this evening, have received a stimulus from this meeting as well as every meeting that has taken place in the last few years. We look to you, gentlemen, for support in the building up of our journals; without that support we can not do ourselves justice, or do justice to you. We look to you for the material which goes into the monuments we are building, and the character of our journals will be exactly as you give us the material. (Applause.)

In response to the toast, "A Quarter Century of the Chicago Dental Society." Dr. Geo. H. Cushing of said Chicago, said:

Mr. President: It is perhaps one of the penalties of advancing years that I have been selected to respond to this toast. I will only refer to some of the phases of this society's existence since twenty-five years ago. Dr. Allport, and every other gentlemen like himself, were impressed with the importance of organizing a society in this city, and we gathered together and succeeded in getting enough to form the nucleus of the society you see to-day. The younger men of the profession have no conception of the difficulties under which we labored. As I look back upon the obstructions that were placed in our way, and then look upon the society that we see before us to-day, it is surprising that we succeeded as we did under so many trials and tribulations. We have now reached a high standing, and, as my friend Dr. Allport has said, while we may look old and gray, we do not feel old, and are not old, professionally. We are looking with hope upon the younger and rising members of the profession who are gathered here. After taking a retrospective view of these many years, as some of us can, we can not but predict a future full of promise. (Applause.)

To the toast, "The City of Chicago, the Professional Center of the West," the Hon. John A. Roche, Mayor, arose amid much applause and spoke as follows:

Mr. President and Gentlemen: I am very glad to be with you, although I must confess that I was not prepared to keep my appointment to-night much better than when I make an appointment with Dr. Brophy. I felt inclined to be here, but, as usual, I was busy and had forgotten I had an engagement. It is very convenient for me to forget when I have an engagement with my friend on the right (meaning Dr. Brophy); I suppose that is the trouble with a good many of those who go to a dentist's office.

Your President says that you love each other. Well, it is well that you do love each other. (Laughter.) I do not want to say anything in the presence of the doctor.

Our friend (meaning Dr. Weeks) from Minnesota extended a kind invitation to you to visit the Northwest. I would be glad to go with you; I am fond of fishing and hunting, and all of the pleasures we may find in Minnesota; but the kind of ducks that the dentists have in Chicago are lame ducks. (Laughter.) We can not say much about game just now; we find it very difficult to have a very large game.

The gentleman who spoke of the pioneers reminded me of twenty-five years ago when a boy in Massachusetts. A dentist informed me, or rather said to a lady friend when I was present, "Here is a boy, who, when he is twenty years of age won't have any teeth." How is it, doctor? (referring to Dr. Brophy.) I am not very old, but I am more than twenty, and I believe I have pretty nearly all of my teeth at the present time, but I changed dentists. (Laughter.) Should I criticise him? I think not. Remember that was only twenty-five years ago. It was in a little town. He did the best he could with the information he had. He didn't use a ladle and pour it in; he did everlastingly hurt when he was hammering it in. It was not the expensive stuff we have to pay for now. (Roars of laughter.) But is it expensive? When you want a good thing you must pay for it. If you would have a good painting you must purchase it from a good artist. If you would have any first-class work done it must be done by one who is skilled in the profession. The use of the hand, the eye, and the close attention that the dentist must necessarily pay to his business is something that we who do not practice can not help noticing. He fabricates something that we can use; and to the gentlemen of this profession I must say that I am surprised at the advancement that has been made in dentistry. (Applause.) With electricity going up into our eight and ten-story buildings, 175 feet above the sidewalk, with the electric engine and all the new apparatus that you now have, we in Chicago may well look forward to being a great center. While in company with a gentleman to-day we talked about the time when we would have a population of two million and a half—there are no St. Louis people here, I suppose. (Loud and prolonged laughter.) Now, if we have these two million and a half of people, and they continue to eat food without any special regard for their teeth, how many teeth would there be to take care of in the city of Chicago? That is a mathematical problem that I would not be able to figure out. But there will be more teeth to be filled if the members of this profession continue to diligently pursue their work, and to do it in such a way as to benefit humanity. I hope that when our city arrives at that point when we will have such a large number of people that we will also have good dental colleges, as well as educated, honest, earnest, reliable men, and that the people who visit the gentlemen engaged in this profession will have more regard for their promises and try to keep their engagements better than myself. (Applause.)

Gentlemen, I am glad to welcome you to our city. I am glad to say to you that we feel proud not only of Chicago, but of the Northwest. We feel proud of the dental societies we have here; we hope they will increase in number, and it will give me great pleasure at any time to attend your dinners, and I will try to come early. (Applause).

Dr. Hanks of Dubuque, Iowa, on rising to leave the banquet-hall to catch a train, said in a few well-chosen words, he had listened with marked attention to the highly interesting papers and discussions at the different sessions of the Society, and desired to express his thanks for being so cordially and royally entertained.

In response to the toast, "The Illinois State Dental Society, most of whose Members have Graced this Occasion by their Presence," Dr. C. B. Rohland of Alton, its former President, spoke as follows:

Mr. President and Gentlemen:—It is said that "Out of the fulness of the heart the mouth speaketh." The Illinois State Dental Society I will not attempt to eulogize. She has done good work. She points with pride to her past. The occasion which we have been celebrating together here is a great success. The Chicago Dental Society has reason to be proud of it, but the Illinois State Dental Society is still prouder, and why? Because it feels that the energy and labor that have brought success here is largely due to the inspiration received from her. She is proud of it because she finds that the bone and sinew of the Chicago Dental Society, which has produced this grand success is largely the bone of her bone and flesh of her flesh. We feel that the success here only points to the anniversary which we hope to celebrate in May, and at which meeting we hope to see everyone who is now here present. We can not help but frankly acknowledge the aid we have received from our neighbors. I see before me the faces of several (out-of-town) members of our State Society, and when our annual meeting comes around, we look forward to their attendance with pleasurable expectation, and I am glad to have this opportunity to express this obligation.

Dr. L. C. Ingersoll of Keokuk, Iowa, in responding to the toast, "Brotherly Love, the Foundation of Ethics," spoke substantially as follows:

Mr. President and Gentlemen: I thank you for this grand demonstration. Dentists of the West, of the North, and of the South, around the banquet table, we owe our thanks to the Chicago Dental Society for inaugurating the occasion for this magnificent demonstration. One of the greatest teachers the world has ever known has said, "Love is the fulfilling of the law, the law of human relation, the relation of man to man, and the relation of man to his God." No man has any right to offer his professional services to his fellow-man unless he has, deep down in his heart of hearts, brotherly love, good-will toward his fellows. Codes of ethics exist in the very nature of man. It is a human relation. I am bound to brotherly love, not by the code of the Illinois State Dental Society or any other society in the world, but because I am a man among men, and for no other reason. I am bound to love it, bound to regard its necessities as equivalent to my own. (Applause.)

Owing to the low tone of voice in which Dr. Ingersoll made his remarks, it was impossible for the stenographer to make a verbatim report of what he said.

To the toast, "Our Benefactors, the Ladies, God Bless Them," Dr. C. C. Chittenden of Madison, Wis., made the following response: I am satisfied that Dr. Swasey selected me to respond to this toast on account of my great similarity to himself, both mentally and physically. (Laughter.) It is a subject which I am utterly incompetent to deal with. If there were ladies here, I might, perhaps, be moved to speak more eloquently than I can possibly do under the circumstances.

Dr. Ingersoll has just spoken of brotherly love, which should actuate us in our actions toward one another; we must do them some good. Brotherly love is instilled into us from childhood by our mothers and those of the other sex with whom we are often thrown in contact. A dentist who does not possess this love can not do the best, the kindest and the most useful thing in ministering to his suffering patient. That, I think, we have all seen in our experience. We are sometimes brought in contact with patients of antagonistic temperament, where it is impossible to do them good; unless we approach them with a womanly feeling, which all dentists should possess in order to gain the confidence of their patients, we can not help them. We owe a great deal to woman. I believe it was Martin Luther who said, "*Wer nicht liebt Wein, Weib und Gesang, Bleibt ein Narr sein Leben lang,*" which, being liberally interpreted by a German friend of mine, means that "A man that don't love his wife, wine and good singing is a d—d fool as long as he lives." (Roars of laughter, followed by loud and prolonged applause.)

The toast, "Our Profession," was responded to by Dr. J. N. Crouse, who spoke at great length in a humorous way.

The President: We will vary the programme slightly and will now listen to "Poets and Poetry," by Dr. H. J. McKellops of St. Louis. The first poem was entitled "The Ivy and the Oak," which was recited with pleasing effect. The second was entitled, "Beautiful Waters." At the close of the recitations Dr. McKellops was warmly applauded.

To the toast, "Our Friends in the South," Dr. H. W. MORGAN of Nashville, Tennessee, said: *Mr. President and Gentlemen:* In response to this toast I am somewhat at a loss how to express myself. There are but a few men from the South here, many of them are detained on account of various circumstances, some by infirmity, others have heard of your cold winters; but when they read the proceedings of this meeting they will regret very much their absence.

I was much impressed with the words of the gentleman who responded to the toast, "The Pioneers of Dentistry," and in this connection I may point to the history of dentistry in the South. The South gave the profession the first dental college, the first dental journal, and the first dental law. (Applause). While we may not be as active in introducing new inventions, new methods or new investigations, I think I may say that our Southern friends are not behind in making use of them. It is with pride that I assure you that our associations are endeavoring to do as earnest work as you are, and while the late President of the Illinois State Dental Society made the remark that the members of this society had a kind feeling toward the societies of adjoining States, you will pardon me, Mr. President, when I say, we have not had the pleasure of seeing your faces with us. The doors of the South are open to you. No ice locks her bounds. You are cordially invited, one and all. Our hospitality and courtesy are only limited to our opportunities to extend them. The next meeting of the Tennessee State Dental Association will be held at Jackson on the Illinois Central Railway, and we trust that not a few who are here to-night may be present on that occasion. I thank you, gentlemen, for this courteous recognition of the men of the South. (Applause.)

The President called upon Hon. C. K. OFFIELD to respond to the toast: "The Legal Aspects of our Profession."

He said if he read history correctly in his earlier days, there were three learned professions—namely, theology, medicine and law, but within the last quarter of a century there had been a ramification of the profession of medicine, and that is the profession of dentistry, closely allied to it, and which in his opinion was one of the component parts which goes to make a complete unit in that profession. And then, too, during the last fifty years medicine has been divided into other component parts. There are now specialists on the eye and ear, the nose and throat, etc., etc.

In referring to the Dental Protective Association, and its relations to the Tooth Crown Company, Attorney OFFIELD said: "Of the professions I know of, the dental profession is the only one that takes out a patent. I know of no member of the theological profession that takes out a patent for the best means of saving the souls of sinners or the evangelization of the earth. I know of no member of the legal profession who takes out a patent for the practice of law, and I think I am safe in stating that no member of the medical profession takes out a patent on any process or discovery he may make."

Dr. A. H. THOMPSON of Topeka, Kansas, responded to the toast, "Dental Literature." During the course of his remarks he said there were two important divisions: (1) Text-books, which classified the knowledge for dental colleges, and (2) the periodical publications which promulgated new discoveries and the current thought of the profession.

Dr. T. W. BROPHY of Chicago, in responding to the toast "The Young Men of the Profession," said: *Mr. President, and Gentlemen:* I am glad the toast has been so announced, because I am one of those who believe that we are a profession. We are not only a profession, but we draw from each of the collateral sciences; and not only from these sciences, but the arts as well. I have quite an acquaintance with the younger men of the profession, and I sometimes wonder whether those who have recently commenced practice become discouraged at failures they have made, and whether they wonder how it is that their fellow practitioners of the same age seem to avoid certain blunders—how they seem to be more prosperous in their profession. If they do they should console themselves with the fact that men engaged in all the vocations of life have failures. Failure is not confined to the profession of dentistry alone. The young men of our profession have very much to be thankful for. They have the advantage of youth, of strength; they have the advantage of the failures and successes that have been made by their predecessors; they have the advantage of better facilities for acquiring a knowledge of their profession than those who preceded them.

We have listened to remarks here this evening by those who have spoken of the history and advancement that has been made in dental literature, journalism, and by the pioneers of the profession. For all the privileges we enjoy we are indebted to the pioneers in our profession; the men who have labored and deprived themselves of many things for the sake of advancing the standard of the profession, and as we have plucked the fruit of their planting, we should all in thankfulness plant for others yet to be. (Great applause.)

To the toast, "Our Absent Friends, that keep the word of Promise to our Ear, and Break it to our Hope," Dr. A. W. HARLAN of Chicago, said: *Mr. President and Gentlemen:* I think that we all feel sure that even though some of our friends may be absent, yet they are all with us in spirit, and I call upon one and all of you to drink with me to our absent friends. (Applause.)

Here every member and guest arose and drank to the health of those that were absent.

Dr. McKELLOPS arose and proposed that every one drink to the success of the Chicago Dental Society, which was done.

The President, after thanking the gentlemen for the close and marked attention with which they had listened to the post-prandial speeches, called upon the orchestra to render "Home, Sweet Home," during which every one arose and participated.

The anniversary meeting, host and guests, then quietly dispersed.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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THE TWENTY-FIFTH ANNIVERSARY OF THE CHICAGO DENTAL SOCIETY.

The long anticipated anniversary of the Chicago Dental Society is a thing of the past. When the committee was appointed at the May meeting to provide for a fitting celebration of the quarter-centenary of the society very few of the members present, realized, what a monster gathering would be assembled in Chicago to participate in this memorable meeting. The date selected, which was historcally correct, seemed inappropriate for calling out a large attendance. Mid-winter meetings have never been attempted in the West before. The dental population, however, is rapidly multiplying in the West and as keen, if not a keener interest is felt in professional progress here than in any part of the world. The committee, composed of Drs. J. N. Crouse, Geo. H. Cushing and Edmund Noyes labored assiduously to present an attractive programme. The selection of subjects for papers was most admirable and every paper was read before the meeting. The authors of all the papers, with a single exception, were western men. The topics embraced a wide range, covering nearly every department of practice, thereby enabling those present to discuss the theory and practice of dentistry purely and simply. The clinics were of an eminently practical nature, due largely to the efforts of Dr. Cattell, and purely professional. The clinic rooms were not encumbered by vendors of dental merchandise, and their stock in trade, so that the attention of on-lookers was not detracted from the legitimate object of a clinic—which is to instruct the eyes as well as the understanding. The weather was propitious, the place of meeting commodious and all the arrangements as nearly perfect as man could provide them. At the opening session about 150 were present when the gavel sounded. During the three days it was estimated that at least 300 gentlemen, beyond the limits of Chicago, were visitors at the meeting. The dentists of Chicago turned out to the number of 200, not including the students from the colleges. If all the visitors, students and Chicago dentists had been present at any one session the Ladies' Ordinary of the Grand Pacific hotel would not have held them; several times "standing room only," could, with justice, have been posted at the entrance.

The value of the papers presented and the discussions thereon will be estimated by our readers who were absent from this anniversary. If it were left to those present, they might be too enthusiastic, as the guest who has had a surfeit of good things, can not always with judgment criticize the feast placed before him by his host. We think the proceedings will not suffer by comparison with any other professional meeting held in recent years in the United States. We invite a careful reading of the proceedings, which will be found free from the blemish of business minutes, amendments to the constitution, politics, the election of officers, or selection of the next place of meeting.

Official Report.

The February and March numbers of the Dental Review are almost entirely given up to the anniversary of the Chicago Dental Society. The papers and discussions will be found complete in this issue with the exception of Dr. R. R. Andrews' paper, which we are compelled to omit because a portion of it was read before the Odontological society of Pennsylvania at its meeting in December. *The International Dental Journal* had a prior right to it, but in our next number we will produce that portion of the paper which was new with the necessary illustrations.

The papers and discussions are *official*, as this journal has the exclusive ownership of the whole proceedings. We need scarcely remind our readers that it was a herculean task to get out these proceedings in a single issue, on such short notice. The meeting did not close until Thursday evening, February 7, and the work of arranging, editing and reading proof has been done by the editor and his staff after the completion of ordinary labors of daily practice. We indulge in no self-praise for the accomplishment of this work in such a short period of time but set it all down as an example of Western dental journalism.

SOCIABILITY.

The climax of sociability and fraternal cordiality, for which the Anniversary Meeting was remarkable, was reached in the "smoke" given to a few of the invited visitors by the Odontological Society. They were received at the Union League Club, at 10:30 P. M., immediately after adjournment of the Wednesday evening session. Diverting entertainment, in the way of music and refreshments, were a delightful accompaniment to the friendly intercourse which lasted till midnight.

THE DENTAL PROTECTIVE ASSOCIATION.

In our January issue we published the by-laws of the above association and the circular accompanying them. We call attention to this matter again while it is fresh in your memory, to urge united effort in resisting all unjust demands on the professional body of dentists. A prompt and ready response is looked for from every dentist whose eye glances over this note.

Address, Dr. J. N. Crouse, 2231 Prairie Ave., Chicago.

THE REVISED LAW FOR ILLINOIS.

The present law went into force in July, 1881. Struggling with the difficulties experienced in other States under like circumstances, its passage was secured by the untiring and disinterested efforts of courageous men, and only after repeated failure. To obtain its final adoption it was found necessary to strike out several valuable features as originally framed, in order to conciliate suspicious or obstinate legislators. It is not surprising then that its operation has proved somewhat unsatisfactory. Realizing this fact the Illinois State Dental Society, at its annual meeting last May, appointed a committee to prepare and endeavor to secure the passage of a new law.

It was made the duty of this committee to carefully consider the subject of dental legislation by a comparison of the laws in other States, and by counsel and correspondence with persons well informed in the matter. In pursuance of this work the committee submitted a revised bill to the dentists of the State, and asked for their criticism and suggestions upon it previous to its "introduction" into the legislature now in session. The bill proposes radical changes, some of which are in the line of dental progress and some of which are of doubtful expediency. A glaring deficiency of the present bill is its lack of provision for revenue whereby it can be carried out. Since its adoption it has imposed upon the Board serious financial burdens, which have not—thanks to the generosity of noble-spirited men—hindered its successful operation. But the public has not the right to require the sacrifice and, furthermore, it is to the discredit of the dental profession of Illinois that it has for so long accepted bounty from a not unwilling, though in fact enforced, alms-giving Board.

If argument is needed, let a few facts and figures be quoted, which have been furnished by a present member of the Board. He says: "During the eight years since its existence, our State Board of Dental Examiners has met nineteen times—at Springfield ten times, at Chicago three, and once each at Quincy, Decatur, Peoria, Rock Island, Jacksonville and Cairo. The time given at these meetings by the various members equals one hundred and fifty days by one man. In addition to this, for consultation outside of the State and in the line of the discharge of the Board's lawful duty, thirty days would be a low estimate. The Secretary, at a very low estimate, has given not less than thirty days' service of eight hours each per annum, which equal in eight years 240 days, or a total of

420 days' service at $5 per day, as allowed by law	$2,100.00
The railroad and sleeping car fares of members, in going to and from meetings, are estimated at not less than	1,000.00
Hotel bills and 'bus fares	500.00
The expenses actually paid for by the Board have been	926.53
Total estimated expense contemplated to be paid for under our present law	4,526.53
Total amount actually received in eight years for fees	413.00
Balance deficit	4,113.53
Of this the State Dental Society and others have contributed	513.53
Balance furnished by the members of the Board	3,600.00

Adequate income is provided for in the revised bill by an increase in the examination fee from two to fifteen dollars (required of all new comers), and an annual registration fee of not more than two dollars,* to be paid by every practitioner in the State. In addition the penalty for violation is raised after the first offense, one-half of which goes to the Board, where formerly it was all absorbed by the public school fund. The severer penalty granted by this measure strengthens the arm of the Board to some hygienic purpose. The annual registration and license fee is a most excellent feature, because it will furnish a reliable and permanent revenue. The Board is given power to revoke the license upon conviction of the holder of a criminal offense. Gross unprofessional conduct should also be constituted a cause. The clause requiring the certificate of registration to be conspicuously exposed in the dental office is open to adverse criticism, as being a habit which is in bad taste in a professional man, and liable to mislead over-credulous people; it is unnecessary, because such documents are always at the call of the proper person. Besides, it would in that way fail to accomplish the object sought, because the public, unfortunately, take little interest in the enforcement of laws framed for their protection. Illegal practitioners are usually prosecuted upon evidence furnished by reputable dentists, rather than by their victims.

Probably the most important innovation contemplated is Section five, which creates the Board into a tribunal to decide by examination who shall and who shall not enter upon the practice of dentistry in the State, graduates from dental colleges not being exempt. This section is evidently framed to meet the evil resulting from a multiplication of dental colleges, some of which were established for the sole purpose of giving professorships and financial benefit to stockholders rather than to do good to the profession. It has come to this pass that legally incorporated colleges are in operation, which are notoriously insufficiently equipped to properly educate in dentistry. These facts have cheapened the degree of Doctor of Dental Surgery to such an extent that it will soon no longer be a sign of dental knowledge and skill. The present law will not allow the Board to discriminate against graduates from disreputable colleges without subjecting it to expensive litigation and the probable chagrin of defeat, which has already been its experience once.

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*Probably one dollar.

Within the past month this section has excited warm comment in some circles, and the following modification taken from the Pennsylvania law has been made to the bill since it has been put upon its passage, viz.:

Insert after word "act," in ninth line of Section five

Provided, That any person desiring to commence the practice of dentistry in this State after this act shall go into effect, and having a diploma issued or purporting to have been issued by a reputable dental college or dental department of any university, shall present the same to the State Board of Examiners, and said board being satisfied as to the genuineness of the diploma and the qualifications of the applicant, shall issue a license to such person to practice dentistry in this State on payment of the license fee hereinafter provided.

This change it will be seen makes examination of applicants optional with the board, the practical working being that a graduate of any college who is suspected of incompetency, will be examined. This can not but react beneficially by raising the status of the colleges and by furnishing the public with better protection from ignorant dentists.

The section under consideration is faulty in respect to its provision for the appointment of members of the board. This power is vested in the Governor of the State. Could the profession be assured that this officer would always be actuated by pure motives in future years, there would be no danger. Unfortunately political influences are so often prejudicial to a wise choice, that the profession could feel no lasting security in the appointing power. In point of fact it is so common to find the laity incapable of judging of dental worth, that it seems possible that the veriest metropolitan quack or rascally "professor" might obtain a place through political influence. To obviate such an evil contingency it is suggested to the Legislative Committee to modify the provision of this section to make it the duty of the Illinois State Dental Society—which surely represents and unites the best elements in the profession of this State—to place in the hands of the Governor annually a list of five names, selected by that society, from which his appointments shall be made.

It follows, as night does the day, that the college faculties whose diplomas have heretofore been accepted as prima facie evidence of fitness to practice, will not submit without protest to the curtailment of their powers or the abasement of their degree, which the new law proposes. Far be it from us to belittle the dental degree. In fact we would be heartily in favor of making the degree compulsory, wherein this revision lacks. It is the one distinguishing mark of the dentist, as a dentist, and should stand for a thorough college training and signify that the possessor is master of the science and art of dentistry. Does it mean this to-day? If this question cannot be answered in the affirmative, the State Board, as servants of the public, are right in requiring an examination of all who are about to enter practice.

The proscription of those interested in dental colleges, as to eligibility for membership in the State Board is preposterous, as the same reasoning would exclude almost any man of reputability in the profession, as being a friend of a friend of a college or as having an opinion that one college might be better than another. We are inclined to the belief that the introduction of the new bill at this session of the Legislature is premature—that the divided opinion will imperil its passage. It would seem that another two* years of observation of the working of dental laws in general will settle many points which are now speculative. A good law is a matter fraught with greater importance to the years which are to come than to the present.

ILLINOIS STATE DENTAL SOCIETY.

As this number of the DENTAL REVIEW will be widely circulated, we desire to call attention to the forthcoming meeting of the State society at Quincy the second Tuesday of May. The annual programme will be issued shortly.

INTERNATIONAL DENTAL CONGRESS.

The date of the opening of the Congress has been fixed for September first. It will be in session one week.

Those of our readers desiring to attend the Congress may leave New York Saturday, August 10, attend the meeting of British Dental Association at Brighton and go over to Paris in good season. Are you going? If you think of it, write to Dr. J. W. Wassall, 208 Dearborn Avenue, Chicago, enclosing stamp for reply. Do this at once.

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* The Illinois Legislature meets biennially.

REVIEWS AND ABSTRACTS.

A Handbook of Dental Pathology for Students and Practitioners, by Albert N. Blodgett, M. D., late Professor of Pathology and Therapeutics, in Boston Dental College. Philadelphia, P. Blakiston, Son & Co., 1888. H. D. Justi, Chicago.

In bringing forth this hand-book the preface explains that "the best apology which the author can offer is the entire absence of any text-book upon the subject of Dental Pathology, to which he could refer successive classes of dental students for reference or instruction," a rather gratuitous disposal of such standard writers as Bond, Wedl, Salter, White and Black.*

This can hardly be accepted without protest from those who have successfully adopted their teaching throughout a long professional career.

The author very properly deems it necessary that the student should first acquire a correct knowledge of the nature and relations of the parts in their normal state before viewing them in a diseased condition. Accordingly the anatomy and physiology of the oral apparatus receives very fair treatment in an original manner and language, that will be a great relief to those who have been so wearied by the stereotyped way in which this subject matter is usually "cribbed" or "adapted" from the old anatomies. Full descriptive details are not attempted—a wise policy because the disproportion is already striking, that in a book on "pathology" almost one-half of the 263 pages are devoted to description of the tissues in their normal state.

The author falls into occasional errors which excite suspicion that he has but little familiarity with current literature, or the truths of modern dental science. In dealing with the subject of absorption, in Chapter IV, it would seem unnecessary in this day to spend words in differentiating between the inherently different processes of absorption of roots of temporary teeth, and dental caries. The conclusion drawn that restorative processes might occur in tooth as in osseous structure, is wrong, because it is based on the false premise that (page 66) "the interior of the organ is provided with a pulp consisting of connective tissue, and containing a large number of nerves and blood-vessels, which ramify through the entire tooth structure, and furnish the means of ample and rapid metamorphosis of tissue."

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* Doctors J. W. White and G. V. Black alone contribute 654 pages to the subject of pathology in the American System of Dentistry.

In discussing the etiology of dental caries the influence of bacteria is hardly recognized, except in so far as "leptothrix buccalis" act. The antiquated theories of Leber and Rottenstein have much space, and the incontrovertible facts established by the investigations of Underwood, Miller and Black are practically ignored.

The chapter on the relation of the digestive organs to diseases of the mouth and teeth is an excellent treatise on the subject. It would be beneficial reading to general practitioners, and eminently instructive to the laity.

A book wherein authentic facts are treated as mooted questions, and fallacious solutions of points which are still veiled in mystery are ingenuously credited, cannot become an authority. A book which teaches that the dentinal sheath contains a nerve filament, or that fails to mention, even, such a disease as "pyorrhœa alveolaris," can gain little permanent importance as a "Dental Pathology."

Finally, a discriminating student-practitioner, familiar with dental literature, will find much instruction and food for thought in this book. It embodies a physician's intelligent observations in a special field. But for the reason that its doctrine is sometimes misleading and often inadequate, the work is unsuitable for a college student's text-book.

PRACTICAL NOTES.

A Case of Dental Fistula Opening on the Mammary Gland.

Translated from the German by Louis Ottofy, D.D.S., Chicago.

The following case reported by Dr. Nicolai, of Stuttgart, Germany, in the *Deutsche Monatssehrift fur Zahnheilkunde* for December, 1888, illustrates forcibly the importance attaching to the necessity of placing the mouth at all hazards in a perfectly physiological condition.

Dr. Nicolai says: A lady, 32 years of age, who has not had her teeth examined for four years, presented herself to me to have her teeth placed in good condition. This necessitated cleaning the teeth, the removal of salivary calculus, and the introduction of eleven gold, six amalgam and two cement fillings.

On the completion of these operations, the mouth was in a normal healthy condition, with the exception of the lower left first molar, of which nothing but the roots were left; these were broken, and underneath the margin of the gum. They were filled with the ichorous products of decomposition, and their margins were overhung with the inflamed, tumefied gum. This condition of affairs has prevented the lady from masticating her food on this side for some time, and as a natural result the right side alone was used.

After having performed all the necessary operations in her mouth, I endeavored, by naming all the disadvantages arising from the presence of the roots, to convince her of the necessity of removing them. I told her that the left side of her mouth was completely useless, that these roots have caused diseases of the two adjoining teeth of the same jaw, and of the articulating tooth of the upper jaw; that a tendency to the recurrence of caries still existed, that inflammation of the gums would always exist and that the breath will be always tainted. All these efforts were futile and were met with the single statement, that while the roots were not painful, she would not submit to their removal.

To diminish the jeopardy of my work to the minimum, I concluded to place the roots in as good a condition as I could, and if possible make them serviceable for mastication on that side of her mouth. Removing the tumefied, spongy gums, and all products of decomposition, and by means of the bur the ichorous contents of the roots, I adopted the most radical means of disinfection known to science, capped the roots with red gutta-percha, and dismissed the patient, satisfied in my belief of having aided her to the best of my ability.

The following day the patient's husband came to my office hastily requesting a few moments' interview. "What have you put in the lower tooth of my wife? Was it iodoform, carbolic acid, creosote, or some such substance having a marked odor?" On being answered in the affirmative, he merely thanked me, stating that the family physician would call on me. In astonishment I awaited the latter's call, who stated to me, that the lady has had a slight discharge of pus for the last eight months, at a location about one c. m. above the left nipple of the breast. There was no apparent disease of the breast. At first cold poultices were applied, these were succeeded by warm ones; later, a probe was introduced following the channel upward, and this was followed by the injection of astringent remedies, and finally by cauterization of the wound. The discharge, however, continues. To-day, the patient claims that she discovers the odor of the medicines used in her tooth yesterday, in the discharge from the breast. He wished to know whether it was possible that the lady is in error or whether it is possible that there is some connection between the breast wound and the roots.

I have had a case of pus inundation, where the discharge took place in the neighborhood of the shoulder. Many cases have been reported in our literature, among others by Carabelli, but no case of infiltration to the mammary gland. The connection, if any exists, can be ascertained with certainty, if it is true that the medicaments used have passed from the roots into the wound on the breast a harmless coloring would also do so. A cochineal solution was injected into the root-canals, and the following day the discharge from the breast was colored, thus positively establishing the connection. I concluded to extract the roots, and thus by removing the primary cause, cure the ailment. The examination made after the extraction of the roots proved that the pus had passed through the basilar portion of the lower maxilla, followed the border of the sterno-cleido-mastoid muscle, perforating the strong fascia of the platysma myoides, it followed the pectoral muscle and infiltrated the tissues of the mammary gland, discharging into the external world according to the laws of gravitation. Phenol water and boracic acid were afterward used. In about twelve days the wound on the breast was healed.

MEMORANDA.

Dr. E. M. Cheadle, formerly of Du Quoin, Ill., has located at Spokane Falls, Wash. Ter.

The present Illinois Legislature has representatives in the persons of Drs. W. G. Williams and E. K. Blair.

Dr. H. C. Miller, the president of the Nebraska State Dental Society, was in Chicago recently.

When a dental journal must remind its readers that it "still leads," is it not time to begin to see if some other journal is not doing something in the same line?

Another dental college, under the name of the "Western Dental College," was recently incorporated in Chicago by John A. Whipple, Frank L. Whipple and Merwin B. Rimes.

Our admiration for the beautiful Psyche Knot rapidly diminishes, after vainly attempting to balance on this hirsute pillar, in the head-rest of the dental chair, for an hour and a half, the lovely head of a sweet maiden.

Readers are cordially invited to contribute to the department of *Practical Notes.* Any useful idea (which may or may not be original) which can be advantageously utilized may be gratefully appreciated by others.

One of the most pleasant accessories to the usual tooth-powder is pure, nice, fresh milk instead of water. It polishes the surface of the enamel and is soothing to inflamed parts of the soft tissues. The mouth should be rinsed with clean water after using the milk.

F. W. Mosebach, a dentist of Minden, Germany, on November 30, 1888, held a jubilee on the fortieth anniversary of his appointment as "Furstlich Schaumburg-hippischer Hofzahnart." Having lived and borne this title for forty years, is sufficient proof that the German lauguage is not so bad after all.

PATRIOTISM.—The *Zahn Woch* says that at a recent meeting of the city council of Vienna a communication was read from a dentist (Herzl) who offered his services gratuitously to insert artificial teeth for one hundred poor girls, in commemoration of the Emperor's accession to the throne of Austria.

The Wisconsin State Dental Society was represented by the President, Dr. W. H. Carson, Milwaukee; Dr. Claude A. Southwell, Milwaukee; Dr. Wm. C. Wendell, Milwaukee; R. G. Richter, Milwaukee; Dr. Chas. C. Chittenden, of Madison; Dr. Geo. H. McCausey, Janesville, E. Palmer, La Crosse, and B. Douglass, Appleton.

The Southern Illinois Dental Society will hold its third annual meeting at Carbondale on April 9th, 10th and 11th. A cordial invitation is extended to all. Exhibitors are invited to correspond with Dr. T. W. Prichett, White hall, Chairman of Executive Committee. Ample accommodations will be provided for clinics and exhibits. C. B. Rohland, Sec'y; G. W. Entsminger, Pres.

One of the principal reasons for the scaling of gold from fillings, made of cohesive gold is the lack of thoroughness in annealing. A little care exercised in this direction will prevent much disfigurement of the surfaces of contour fillings, and the dentist will not be called upon so often to examine his own operations to discover whether a filling has "come out or not." The gold should be clean and made red by the heat, but it must not be burned or melted as that degree of heat is injurious to it—especially in filling.

The St. Louis Dental Society held its annual meeting at the office of Dr. A. J. Prosser, 3109 Olive street, Wednesday evening, January 2, and the following officers were elected for 1889: President, Dr. A. J. Prosser; Vice-President, Dr. J. Warren Wick; Recording Secretary, Dr. Jessie E. Grosheider; Corresponding Secretary, Dr. William Conrad; Treasurer, Dr. Henry Fisher; Publication Committee, Drs. H. H. Keith, John G. Harper and J. B. Vernon; Committee on Ethics and Elections, Drs. J. B. Newby, Wm. N. Morrison and A. H. Fuller. There were seventeen (17) meetings held and fourteen (14) papers presented during the year 1888.

As a mark of identification, the teeth have played an important part, even in ancient times. In the "Historie de l'Empire Romain," a French author cites the case of the Roman Empress Agrippina, wife to Claudius, the Emperor, who lived in the first century of the Christian era. When she became consort to the Emperor Claudius, after Messalina, his first wife was murdered, Lollia Paulina had been proposed as the second consort of Claudius. Agrippina however had her murdered and to assure the throne to her own son, Nero, she dipped her hands in the blood of Lollia, and to be positive that the blood was in reality that shed by her victim, the new Empress had the head of Lollia brought to her, the face having been so mutilated as to be beyond recognition; with her own hand she opened the mouth and examined the teeth, that by their peculiar irregularity she might identify the head of her victim.

In regard to cremation in Japan, the *North China News* says: "The coffin having been placed on the properly arranged wood and covered with blazing straw mats, was shut in by the iron door and left for the fire to do its work. All the chambers were connected with the tall chimney, so that smoke and everything unpleasant are rapidly carried away and dispersed in the upper air. On the third day friends come and search in the ashes for the teeth and upper bone of the vertebræ. These are carefully collected, placed in a little box, and sent to the village or town where the deceased was born. There the box is placed upon a shelf before the family shrine. Boxes for this purpose, neatly made, may be purchased on the premises. In conversation with a Japanese dentist, I asked what would be done in the case of an old man, or one who had no teeth. He said if he found it necessary to extract a tooth that tooth would be sure to be asked for by its owner, to be by him treasured up that it might at some future time be placed in the little box and sent with the rest to the ancestral shrine. He added that it was elderly men chiefly who asked for their teeth; the younger men did not seem to attach much importance to it. The charge for cremation seems to vary from 80 cents to $1 and more."

PREMATURELY ERUPTED TEETH.

I do not believe it good to advise extraction of prematurely erupted incisors in infants, as noted in your "memoranda." Children ordinarily nurse long after they have teeth, and the loss of the incisors might prove in the end to be very ill-advised in my opinion. If very sharp, their edges could be dulled.

G. NEWKIRK.

NECROLOGICAL—MEDICINE.

Dr. James Montgomery, Bloomington, Ill.; Dr. Daliet Baryington, Knoxville, Tenn.; Dr. W. M. Carpenter, New York; Dr. S. B. Thrall, ex-Secretary State Medical Society, Ottumwa, Iowa; Dr. G. A. Crosby, Manchester, N. H.; Dr. Henry Cox, DesMoines, Iowa; Dr. E. M. Willett, Memphis, Tenn.; Dr. Isaac Scott, Parkersburg, W. Va.; Dr. David Bell, Lexington, Ky.; Dr. Lewis J. Williams, Medical Director, U. S. A.; Dr. Cornelius R. Agnew, New York; Dr. Edward G. Loring, New York; Dr. Edmund S. Dunster, University of Michigan; Dr. Chauncey L. Mitchell, Brooklyn, New York; Dr. Wesley Humphrey, Kansas City, Mo.; Dr. Joseph Aub, Oculist, Cincinnati, Ohio; Dr. William Taggart, Owen, Ind.; Dr. Steven G. De La Mater, Duamesburg, N. Y.; Dr. Thomas J. Gallagher, Pittsburgh, Pa.; Dr. Henry F. Quackenboss, New York; Dr. Nathan Field, Jeffersonville, Ind.; Dr. E. G. Dyer, Racine, Wis.; Dr. E. Williams, oculist, Cincinnati, Ohio; Dr. Joseph Sargent, Worcester, Mass.; Dr. John S. Arnold, New York; Dr. W. R. Childs, Philadelphia, Pa.; Dr. Henry B. Sands, surgeon, New York; Dr. Edward G. Steele, New York; Dr. H. D. Schmidt, New Orleans, La.; Dr. Homer O. Hitchcock, Kalamazoo, Mich.

MISSISSIPPI VALLEY MEETING.

The forty-fifth annual meeting of the Mississippi Valley Association of Dental Surgeons will be held in Lincoln Club Hall (Eighth and Race streets), Cincinnati, Ohio, on the first Wednesday in March (6th prox.), at 10 o'clock a. m.

Members of the profession are cordially invited to be present, as matters of interest will be presented. The principal feature of this meeting will be the number of clinics. Drs. How, of Philadelphia; Butler, of Cleveland; Morrison, St. Louis; Moore, Detroit; Callahan, Hillsboro; Conrad, St. Louis; Hinkley, Cincinnati; Barricklow, Cincinnati; McMillan, Alton, Ill.; Templeton, Pittsburg, and Wick of St. Louis, have promised to be present and give a clinic. The S. S. White Co. will exhibit some novelties in dental engine, electrical and other operative appliances.

The committee expect to secure reduced rates, therefore the usual receipt should be taken at the starting point, when railroad tickets are purchased.

E. G. Betty,
Wm. Conrad, } Executive Committee.
O. N. Heise.

POISONED (?) BY MERCURY.

We call attention to the undermentioned case, as it often appears in the public prints and is seldom refuted or noticed by dentists. We do not think mercury had anything to do with the case, and if any of our readers think otherwise they are invited to notice the article in our next issue:

"POISONED BY HIS TEETH"—THE REMARKABLE CASE OF ELLSWORTH BENNETT, WHICH PERPLEXES THE DOCTORS.

The case of Ellsworth Bennett, of 89 Wolcott street, New Haven, Connecticut, has attracted unusual attention in medical circles in that city, and obtaining no relief from physicians there he proposes to go to New York for treatment.

Some months ago Bennett, who is employed as a freight brakeman on the New York, New Haven & Hartford road, decided to purchase a set of false teeth. He had been without teeth for over a year and a half and his gums were hard and in excellent condition for the fitting of the artificial set. He visited a Chapel street dentist and was provided with an upper set which, when first tried on, fitted perfectly. Mr. Bennett wore the teeth that night. About two o'clock in the morning he was awakened by a terrible pain in his head and was startled to find that his tongue was swollen until it was nearly two inches thick and protruded from his mouth nearly an inch, causing intense pain. After a time this swelling subsided, only to appear in some other portion of his body.

Bennett visited Medical Examiner M. C. White for the purpose of having the artificial teeth and plate analyzed. The teeth were of the ordinary kind and the plate was of red rubber. Dr. White told him that no analysis was necessary; that he could tell that mercury had been used in the making of the rubber plate, and that it was the absorption of this poison into the system that had caused the swellings.

After that Bennett's hands swelled up to three times their natural size and he could not use them in any way. This had hardly disappeared when his feet swelled in the same way. Afterward his knee-joints were as badly affected; then his ears swelled, and finally the poison settled in his eyes and he became blind for a time. The swellings are painless except when the tongue is affected. Then Mr. Bennett suffers intense pain from the straining of the facial muscles.

The majority of the doctors said when first consulted that the swellings were caused by mercurial poisoning, but up to the present time they have not succeeded in expelling the mercury from his system.—*The Times.*

PROGRAMME OF THE ST. LOUIS DENTAL SOCIETY, 1889.

The following papers will be read before the St. Louis Dental Society during the year 1889, and at the meetings specified:

February 19th.—Dr. Geo. W. Dennis. Subject: Antiseptics and Disinfectants. Discussion opened by Dr. Jesse E. Grosheider.

March 5th.—Dr. J. E. Grosheider. Subject: Chemistry. Discussion opened by Dr. G. W. Dennis.

March 19th.—Dr. Wm. Conrad. Subject: Dental Journals—why dentists should take and read them. Discussion opened by Dr. J. W. Wick.

April 2d.—Dr. H. H. Keith. Subject: Painless Dentistry. Discussion opened by Dr. M. C. McNamara.

April 16th.—Dr. J. G. Harper. Subject: Dental Medicine. Discussion opened by Dr. J. W. Whipple.

May 7th.—Dr. A. J. Prosser. Subject: General Practice. Discussion opened by Dr. Geo. Robitoy.

May 21st.—Dr. J. B. Newby. Subject: Thorough versus Quick Operations. Discussion opened by Dr. Geo. A. Bowman.

June 4th.—Dr. J. W. Whipple. Subject: Cements—their virtues and faults. Discussion opened by Dr. H. H. Keith.

June 18th.—Dr. A. H. Fuller. Subject: Conditions Affecting Practice. Discussion opened by Dr. Henry Fisher.

July 2d.—Dr. Geo. Robitoy. Subject: Cases in Practice. Discussion opened by Dr. J. B. Vernon.

September 17th.—Dr. Henry Fisher. Subject: Filling Materials and their place in practice. Discussion opened by Dr. W. N. Morrison.

October 1st.—Dr. J. H. Spalding. Subject: Calcareous Deposits on the Teeth. Discussion opened by Dr. Blank.

October 15th.—Dr. Wm. N. Morrison. Subject: Planting Teeth. Discussion opened by Dr. A. H. Fuller.

November 5th.—Dr. J. J. R. Patrick. Subject: The Dental Pulp and the Peridental Membrane. Discussion opened by Dr. W. H. Eames.

November 19th.—Dr. W. H. Eames. Subject: Dental Literature. Discussion opened by Dr. C. W. Spalding.

December 3d.—Dr. C. W. Spalding. Subject to be announced. Discussion opened by Dr. J. J. R. Patrick.

December 17th.—Dr. Geo. A. Bowman. Subject: Dental Ethics. Discussion opened by Dr. J. B. Newby.

The *Dominion Dental Journal*, volume 1, No. 1, lies on our desk. This new aspirant for the favor of the dental-reading public is successor to the *Canada*

Journal of Dental Science, deceased some years ago. Dr. W. Geo. Beers of Montreal is the editor. Dr. Beers needs no introduction, as he is by all tokens the best known dentist in Canada, not only for his abilities as a practitioner, but as a literateur. We wish the new journal the fullest success.

OBITUARY.

The following preamble and resolutions to the memory of the late Mr. Louis Schindler, who died of pneumonia while attending college, were adopted by his fellow students in the Chicago College of Dental Surgery:

CHICAGO, Jan. 10, 1889.

WHEREAS, It has pleased the Supreme Being, the Creator of All, to remove from our midst our late fellow student Louis Schindler, and

WHEREAS, In view of the great loss we have sustained by the death of our friend and associate and of the still heavier loss sustained by those who were nearest and dearest to him, therefore be it

Resolved, That it is but a just tribute to the memory of our friend to say that in regretting his departure from our midst we mourn for one who was in every way worthy of our respect and esteem.

Resolved, That we his fellow students sincerely condole with the family of the deceased in the dispensation with which it has pleased Divine Providence to afflict them, and, commend them for consolation to Him who orders all things for the best and whose chastisements are sent in mercy.

Resolved, That this testimonial of our deep sympathy be forwarded to the mother and sisters of our late class-mate.

Resolved, That a copy of the foregoing resolutions be sent to the DENTAL REVIEW for publication.

EDWARD FLYNN,
BENJAMIN F. ESHELMAN, } Committee.
IRWIN F. UPSON

DIED: E. BRASSEUR, M. F. P. It is with sincere regret that we chronicle the sudden demise of our distinguished confrere, M. E. Brasseur, Director of the Dental School of France, President of the Odontological Society of France, and Vice-President of the Committee of Organization of the International Dental Congress, to be held in Paris, September 1 to 8, 1889. *L'Odontologie*, for January, has a brief notice of his life-work in his chosen profession. Our acquaintance with M. Brasseur was pleasurable but of short duration, having met him in Paris once or twice only, and being conducted over the *Institut Odontotechnique* by him personally. He was a man of commanding presence, with a pleasant exterior and an indefatigable aptitude for labor. The profession of France lose in him an honorable man and faithful teacher, and the State an eminent citizen.

DIED: Dr. J. C. Dalton, the eminent physiologist, died February 12, 1889.

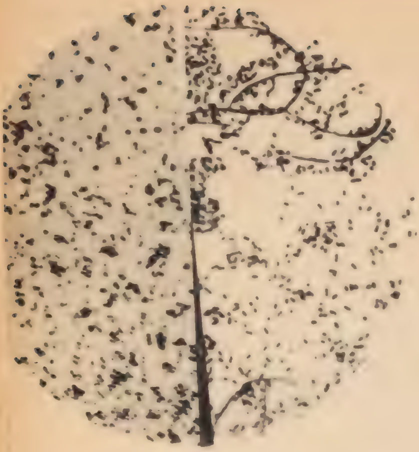

FIG. 1.
icro-organisms found in deep seated caries. Micro- and diplo-cocci. From Dr. Miller's pure cultures.

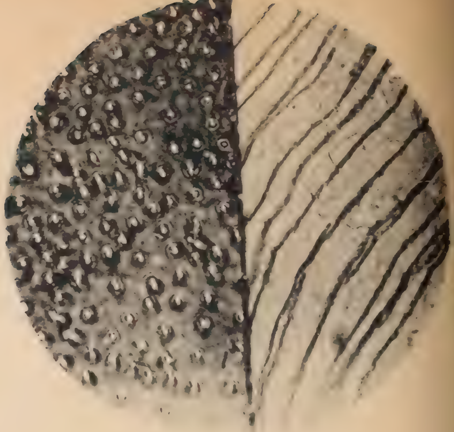

FIG. 2.
Longitudinal and cross section of healthy, non-infected dentine. Dr. Andrews' preparation.

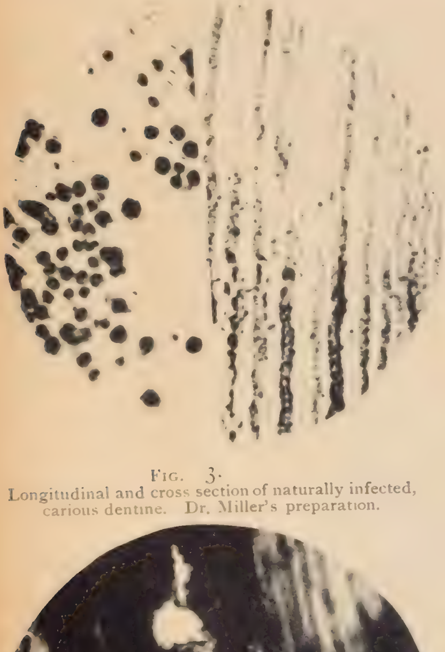

FIG. 3.
Longitudinal and cross section of naturally infected, carious dentine. Dr. Miller's preparation.

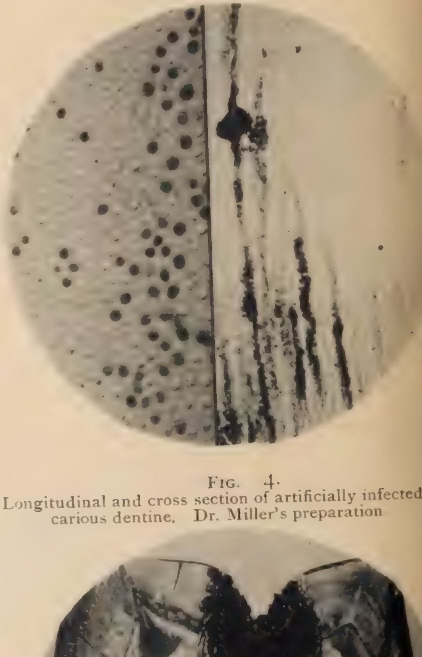

FIG. 4.
Longitudinal and cross section of artificially infected, carious dentine. Dr. Miller's preparation

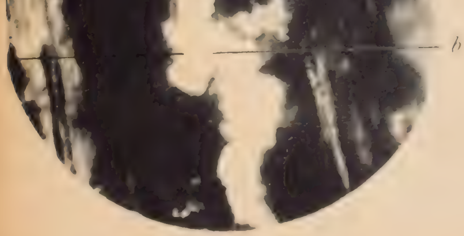

FIG. 5.
ection of a cavity formed by micro-organisms. Natural decay. A, mass of micro-organisms. B, cavity formed. Dr. Miller's preparation.

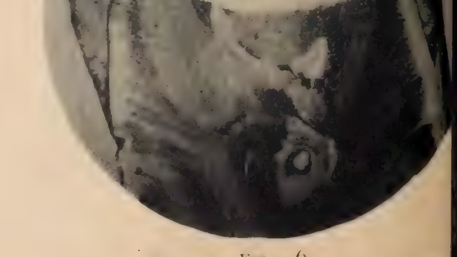

FIG. 6.
(Diagramatic.) Showing the white zone of decalcif dentine at B. Micro-organisms at A. Dr. Andrews preparation.

THE

DENTAL REVIEW.

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ORIGINAL COMMUNICATIONS.

THE FORMATION OF DENTINE AND ITS APPEARANCE IN HEALTH AND DECAY.*

BY. R. R. ANDREWS, D. D. S., CAMBRIDGE, MASS.

Let me first ask your attention to the consideration of the formation of a tissue that seems to have had but little written about it; perhaps it has been but little understood. I allude to the band of only partially calcified substance which is everywhere found on the border-land of calcification. In studying the formation of dentine with the higher powers of the microscope, from tissues which have become decalcified by the action of weak acids, there is found between what was the fully calcified tissue and the adjacent organic tissue from which it is formed, this peculiar layer, hyaline in its appearance. It has been named Calco-globulin. The sections which I have studied are cross sections of forming teeth on the edge of the calcifying dentine germ. The peculiar globular formations next the formed layer of dentine, show best in tissue that has been in the decalcifying acid for two or three days only. A brief description of the experiments of Prof. Harting and Mr. Rainey, showing the peculiar action of some of the salts of lime, in albumen, may be of interest to us at this point; for they claim by these experiments to have found the clue to the explanation of the development of teeth, bone and shell. Mr. Rainey found that if carbonate of lime be slowly added to a thick solution of albumen, the resultant salt is in the form of globules laminated in structure like tiny onions. These globules, which have been named "calcospherites," when in contact, become agglomerated into a single laminated mass. In the substitution of the globular for the crystalline form in the salts of lime when in contact with albumen, Mr. Rainey claims to find the clue to the explanation of the development of bone, teeth and shells. What he found, was really the first stage in the process of the calcification. Prof. Harting has shown that the albumen left behind after the treatment of these globules with acid, is no longer ordinary albumen. It is profoundly modified, and has become exceedingly resistant to the action of acids, resembling chitine—the substance of which the hard skin of insects consists, rather than any other body. It appears that the lime is held in some sort of chemical combination, for the last traces of lime are retained very obstinately when calco-globulin is submitted to the action of acids, in the same manner as does that layer which is found everywhere on the border land of calcification. In the course of my investigation I have found many sections showing the formation of these peculiar globular masses on the edge of forming dentine or enamel. They are seen next to the dentine, towards the pulp, and apparently among the odontoblasts, even with a low power. The pulp tissue, and the odontoblasts may be pulled away from the layer of dentine, with no appearance of globular masses clinging to it. The dentine edge however, has a glistening appearance, something like the globules mentioned above; and under a high power ($^1/_{12}$ Im. obj.), this glistening edge shows rounded contours, as if there had been globules, which had become in part, the already formed band of dentine. In the substance of some of the odontoblasts, and even in the tissue of the pulp near them, are seen calco-spherites.

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*This paper was followed by a lantern exhibition of photo-micrographs, illustrating the development of the teeth, and normal and pathological dentine.

The forming layer is at this very early stage of the formation of the dentine, about as wide as the layer of dentine formed, and is also about as wide as the layer of odontoblasts. At a later stage when the calcified layer of dentine is thicker the layer of calco-globulin is much narrower, and I have never been fortunate enough to observe it forming in this manner, although indications of globules and globular masses are never difficult to find within the layer of calco-globulin. In my demonstration on the screen I shall show these globules and globular masses, and where they, by coalescing, are forming a layer.

Let me now call your attention to the subject of dentine in decay, carious dentine. On this subject I wish to say I have very little that is original to offer. Prof. Dr. W. D. Miller, an American dentist in Berlin, has left but little for anyone else to do. His work has been very thorough. He has had the advantage of working beside the foremost mycologist of the age, and his experiments bear the stamp of being more trustworthy and carefully prepared than any of the workers in this special field, either before or since his time. Magitot had made many experiments while investigating this subject, and had produced caries out of the mouth by means of weak acids, that to all appearance, macroscopically, were like natural decay, but here the similarity ceased; for, under the microscope, the appearance presented by the tissue was totally unlike natural decay. Dr. Miller's early work led him to believe, as a result of many experiments, that the first stages of decay were caused by acids, for the most part generated in the mouth by fermentation; and he went to work to determine the nature of this ferment and the conditions essential to its action, to find, examine and describe it. How well he has accomplished his task some of us know. Yet it seems strange that there are so many yet who do not appreciate the importance of this work. I have been most fortunate in having the use of many of Dr. Miller's most valued sections of specimens, both of natural and of his artificially produced decay. These specimens show beautifully the results of his very carefully conducted experiments, and it is the photo-micrographs of these, without any retouching or any change whatever, that I am to show you to-night, where all can see and judge for themselves. As one having had quite an experience in microscopy, I can truly say that it would be impossible for me to tell, under the higher powers of the microscope, which was the section of natural caries or which the section of artificial caries produced by Dr. Miller in one of his pure cultures outside the mouth, either long or cross section. That he was keenly alive to the importance of knowing the cause for the decay of the teeth is shown from extracts of early papers, several years before his more important experiments were made which determined the nature of the fermentation in the mouth, and its relation to dental caries. In 1882 he wrote: "I have for a long time been impressed with the idea that we are all, so to say, afloat in our investigations of dental caries. I look upon the leptothrix buccalis as the chief agent in its production. It produces not alone threads, but bacilli, bacteria, micrococci, and the screw-forms, but I believe it is the coccus form which is the most destructive to tooth tissue.

We are reminded that we must keep our eyes open, for there are some things about dental caries of which we have not dreamed." At the end of his article he further says: "If we were able to say with certainty that the leptothrix buccalis generates an acid or an alkali, or that it leaves its substratum neutral, we should be spared a great deal of unnecessary work and thinking."

Possibly the writings of Ficinus, Urdel, Kleuke, Leber and Rottenstein, Wedl, Salter and Milles and Underwood—who had found and described micro-organisms in carious dentine—gave him an inkling into what was really needed to establish the germ theory upon a firmer basis. It is hardly necessary for me to more than outline the experiments made by Dr. Miller, as these investigations are now a part of our history. Those who are not familiar with the extreme care or the great amount of time and labor required to conduct such a series of exact experiments can as yet hardly realize the services that Dr. Miller has rendered to his profession, or how thoroughly he has finished his task. The spirit of the man is shown in this sentence, when he commences the record of his experiments: "If I have been guilty of any oversight, or failed to take all possible precautions to guard against error, I hope that some one will kindly show me where I have gone astray, and put me in the right course again."

His first experiment was to determine whether or not the ptyaline of the saliva could so change starch as to produce an acid. He found that it would not. The starch was changed into sugar, and this was all; the fluid remaining sweet when proper care was taken to prevent the ingress of germs, thus proving that the power of changing to an acid does not belong to the saliva. It must, then, be something else. He took a freshly extracted tooth, removed all food, and saturated the outer portion with 90 per cent solution of carbolic acid to destroy any germs that might be on the surface; then with a sterilized instrument removed a part of the inner portion of the carious dentine. This was quickly conveyed to a sterilized culture medium, composed of sterilized saliva, sugar, starch and water, and then placed in an incubator, together with another test tube of the same culture fluid uninfected. In twenty-four hours the infected culture became acid, while the other did not. Repetitions of this experiment of a sufficient number were made to establish the fact that the acidity was due to the infection. From the cultures that had become acid other cultures were infected which also became acid, showing that Dr. Miller was dealing with an organized ferment, one capable of propagating itself, and a microscopical examination showed that the organisms in the culture were similar to those found in the deeper layers of the decay. In determining the kind of acid produced, Dr. Miller found good use for his special chemical knowledge; his analysis, which was very carefully conducted, proved beyond question that this acid was the common ferment, lactic acid. This acid, newly formed, a waste product of the micro organisms, has a powerful affinity for the lime salts of the dentine. It is constantly being given off, and decalcifies the tissue considerably beyond that occupied by the organisms, thus forming the decalcified zone, free from the organisms, which is everywhere found between the carious and the non-carious dentine. Sugar, that is almost always found present in the mouth, and that changed from starchy food by the action of the ptyaline of the saliva is the natural food for these organisms. There are but two forms found in the deeper layers of carious dentine, one always present, producing lactic acid, the other often present, more than probably producing the same acid, the micro and diplo-cocci. See Fig. 1. They are reproduced in the following manner: A coccus which may be round in the beginning is seen by extension on one axis, to become oval or elongated; soon after it shows a contraction in the middle, resulting in the production of a diplo-coccus, or two cocci, each of which may produce two others in the same manner. The existence of spores has never been detected. Dr. Miller reasoned that if these organisms were the direct cause of caries, he ought to be able to produce true caries by subjecting healthy normal dentine to their action. It is a law with mycologists to determine whether any particular micro-organism is the prime cause of any special disease:

First. That the micro-organism must be found in the blood lymph or diseased tissue of man or animal suffering from, or dead of the disease.

Second. The micro-organism thus obtained must be isolated and cultivated in suitable media, that is, outside the animal body. These pure cultivations must be carried on through successive generations of the organism.

Third. A pure cultivation thus obtained must, when introduced into the body of a healthy animal, susceptible to the disease, produce the disease.

Fourth, (and lastly.) In the tissue of the inoculated animal, the same micro-organisms must again be found. Dr. Miller makes his experiments conform to the same rigid unyielding law, so far as it could be done with the human tooth, and the results are so convincing as to make the truth of this theory self-evident. He procured a decayed tooth and thoroughly sterilized its outer surfaces; then with a sterilized knife-point two portions of the decay were carefully removed from the deepest portion of the caries. These were carefully placed in two tubes, a piece in each, one containing a fermentable mixture, beef extract, to which 2 per cent of cane sugar had been added, and the other a non-fermentable fluid, beef extract without sugar. Both of the tubes and their contents had been previously completely sterilized before adding decayed dentine. He then procured a freshly drawn, healthy bicuspid tooth. This was completely sterilized, and sections made from it, and a number of them placed in each tube. The tube containing sugar became acid in a few hours; the tube containing no sugar remained neutral. The sections of the sound tooth that had been sterilized and placed in the first tube with the sugar, soon softened, and at the end of a week could be bent like a piece of soft cartilage. The sections of the sound tooth placed in the non-fermentable mixture remained unchanged. At the end of the second week the sections in the fermentable tube became completely decalcified, and could easily be cut with a knife. Some of these decalcified pieces were placed in a freezing microtome, and thin sections cut, which were stained and mounted in the usual manner. The stain used was one that stained the organisms and not the dentine.

These sections were then submitted to microscopical examination. All the appearances found in natural caries were found to be present in those that had been artificially produced. Compare Figs. 3 and 4. There were the same distended tubules, crowded full of micro-organisms, breaking down the substance of the dentine. In some places the walls were broken through, producing oval spaces or caverns in the dentine. See Fig. 5. Dr. Miller had thus produced caries artificially by inoculating sound dentine from a culture of organisms found in natural decay, in the presence of the same fermentable substances that are found in the mouth. In the other tube even the thinnest section did not show a trace of softening. Could a clearer solution of the problem of deep-seated caries be desired? It seems impossible that there can be any doubt in regard to these conclusions. One better fitted for the work than Dr. Miller it would be difficult to find. His thorough knowledge of chemistry, of mycology and of microscopy, together with a keen love for investigation, amply meet the highest scientific demands. In this country there are but a few active investigators in this difficult field of inquiry. There is, nevertheless, a wide-spread interest in their investigations, and a keen desire to know the results. Hitherto these results have been somewhat contradictory; some have uttered opinions entirely opposed one to the other. It has, therefore, been difficult to arrive at definite conclusions. When experiments are so carefully made, and in such a purely scientific manner as they have been by Dr. Miller, we can not fail to attach great weight to his conclusions. He has given the minutest details of all experiments, so that it would be easy for any one of us, if we so desired, to repeat them ourselves. And I feel sure that I speak within bounds when I make to you this statement, that his views are generally accepted by those whose special education in pathology, mycology, chemistry and microscopy best fit them to judge of their reliability. A few extracts from a recent letter of Dr. Miller's may be of interest.

In speaking of some of his recent work he mentions that he has succeeded in making a number of preparations from carious teeth of a horse. He finds the tubules distended, full of micro-organisms, and appear in every way like caries of the human tooth. He also mentions making many from the carious teeth of dogs, These, he says, show the same characteristics. The organisms in the tubules of both horse and dog are chiefly micrococci. In answering the question, have you tried to produce artificial caries by weak acids protecting the tooth, except at the point acted on, he answers: "I have made such experiments as you mention, protecting the tooth with wax, but I have not made many of them. I consider it a useless waste of time. Magitot and others have proven beyond the shadow of a doubt that in this manner the macroscopical appearance of caries can be very exactly imitated. Why trouble ourselves any more about that? I have, however, a few pieces which, to the naked eye, can not be distinguished from true caries."

He states that the decalcified zone, in advance of the germs, is found everywhere in artificially produced, as well as natural caries, particularly at the sides of cavities in the crown, for the reason that the decalcification extends about as rapidly laterally as toward the pulp. Not so, however, the bacteria. He implies here that they are found only in those tubes opening to the outer surface and exposed to the saliva. See Fig. 6.

ANNEALING GOLD.

CHICAGO, March 15, 1889.

Dr. W. C. Barrett.

MY DEAR DOCTOR:—Do you know anything about annealing gold in addition to what Dr. Black said in the January number of THE DENTAL REVIEW? Yours truly,

A. W. HARLAN.

No. 208 Franklin Street,
BUFFALO, N. Y,, March 20, 1889.

Dear Doctor Harlan:

In answer to yours of the 15th inst., I can only say—Very little, if anything. When Prof. Black writes upon a subject he does not leave much for the consideration of amateurs. And yet, my method of annealing gold foil is materially different from that which he recommends, and certainly I ought to have some reasons for a practice which I have followed for twenty years. Perhaps I had better attempt a formulation of them.

His reference to the earnest discussion of this subject, which followed the introduction of cohesive gold, brought to my mind a flood-tide of memories of that period. We were then very anxious to know what were the secrets of the manufacturers of foil, and what gave a distinctive character to the products of certain beaters. In the course of my own investigations I spent some days in one of the largest manufactories in the United States. Every facility was afforded me, yet I came away very little wiser than when I went there. One thing I learned, and that was that pure gold, fresh from either the refiner's crucible or the beater's hammer, was cohesive at ordinary temperatures. Pure ingots would cohere, as would the sheets of pure, clean foil, and I became satisfied that the so-called non-cohesive foil owed its character to some extrinsic quality. But Dr. Black's experience and reasoning concerning the condensation of foreign substances upon the surface of foil covers that ground so completely that there is no necessity for my making further allusions to it.

The proper annealing of foil, it seems to me, however, involves yet another principle. We know that heat is the antithesis of cohesion—it destroys it. To insure the perfect union of two pieces of gold it is only essential that the heat be sufficient to make them entirely fluid, breaking up the crystallization, when they immediately unite spontaneously, and re-crystallize into a homogeneous mass. A gentle heat causes the expansion of metals—that is, a partial separation, a driving asunder of their constituent crystals, in which condition two such bodies are more easily forced into a permanent coherence with each other, through an interlacing and interlocking of their granules by means of a sudden impact, as from the blow of a hammer. Witness the blacksmith's welding of iron or steel. Of course it must be premised that every intervening foreign substance has been removed, and to facilitate this a flux is sometimes necessary, which will unite with the extraneous matter and thus eliminate it.

We know that if foil be left for a time after annealing, it again becomes partially non-cohesive. I believe that this is not wholly due to fresh condensation upon its surface, but that in addition to this the particles resume their former close relation with each other, and hence do not so readily enter into relation with those of another body of the same metal. The readiness with which pieces of pure and clean gold unite depends somewhat upon the extent to which cohesion of the particles has been destroyed, and the nearer we come to complete fusion the more readily is perfect union attained. But this readiness to unite when heated is not instantly lost upon cooling. It takes a little time for the crystals to settle back into their exact former relationship, and hence it is not essential that the mass of a gold filling and the piece to be added should be kept at a high temperature, which would, of course, be impracticable. It is sufficient that they be united very soon after the heating.

A very high temperature, my own experience teaches me, is not necessary for the reduction of gold to a condition which is sufficiently favorable for the ready welding of small pieces together. Perhaps it might be desirable, were it not the fact that this involves the production of other conditions which are inimical to the desired end.

In the first place, if a number of layers of foil in contact, or close proximity, as in pellets or rope, are heated to a cherry red, the mere handling of them with the plyers in annealing and carrying to place causes a premature cohesion, thus forming a thick, hard, partially welded mass, which is intractable under the instrument, and is liable to "bridge over," thus preventing a perfect union with the mass which has already been condensed. Such a piece is harsh and stiff, unyielding and impliable. It may unite with the body of the filling at the edges, but it is not thoroughly coherent, and it will be likely to flake off when sufficient force is exerted by subsequent malleting or practical use to break away the slight attachment at the periphery of the piece.

2nd. It is almost impossible when layers of thin foil are passed through a flame to avoid curling and melting of the exposed single films and corners. This will be fatal to a perfect union, for the minute lumps thus formed can not be so manipulated as to condense thoroughly. The irregular masses will not be brought into such intimate relation of the particles as to favor their perfect cohesion under the necessarily light blows of the mallet upon a tooth. If enough of force were employed, it would be likely to shatter frail walls, besides proving intolerable to the patient.

3rd. I have found it impracticable to perfectly anneal a piece of foil held in the plyers, because, as Dr. Black says, that part between the points will be left unannealed.

4th. I believe that the best results are obtained when all the foil of which a filling is to be composed is subjected to the same degree of heat, and is therefore alike in condition. If one part of a pellet is raised to a higher temperature than the rest, the two parts are unlike; the conditions are variant, and the results will not be uniform. One portion is over and the other underheated. As metallurgists, we all know the desirability of a definite, even and steady temperature in the manipulation of metals.

5th. Those who have had any experience in working gold are aware that two pieces of gold—coin for instance—may possess widely different physical characteristics. The one will be soft, ductile, and readily swaged into any shape. The other will be harsh, unyielding and brittle. I have found that two batches of foil, beaten by the same hand, will be more or less unlike, and require quite different handling. Both may be capable of producing excellent effects if intelligently manipulated. But while the one makes the best filling when annealed at a low temperature and condensed with many light blows of the mallet, the other requires a high annealing point and harder pounding.

6th. My experience has led me to the conclusion that slow annealing produces better effects than when the temperature is suddenly raised. As gold after heating slowly returns to its original condition, it seems to me evident that the change which we desire to produce should be a gradual one. Violent and abrupt transitions from one state to another are not favorable to delicate manipulations.

7th. The passing of foil through a flame I believe is likely, in some cases, to lead to the very end which we most wish to avoid—its contamination. Whatever may be the source of the flame, there will be certain products of combustion, which will be deposited upon or mingled among the layers of the foil. The alcohol flame is doubtless most free from these, but even that is not wholly so. If a gas jet is employed, even though a Bunsen burner be used, considerable carbon is unavoidable, while there is always sufficient floating matter in the air to contaminate any flame. A close inspection will show a constantly varying color, due to the combustion of different floating matter.

8th. I am satisfied that the annealing of gold at a high temperature, while held between steel plyers softened by repeated heatings, will result in the mingling with the gold of sufficient iron, burned off from the points, to materially affect the working qualities of the foil in some cases. I am not at all sure but that some, at least, of the mysterious blackening of gold fillings in the mouth, of which many have complained, is due to this burning of the iron into the foil.

Do you say that some of these are but matters of trifling import, and not likely to seriously mar effects? Perhaps this may be so in the majority of cases, but under favoring circumstances a trifling error may materially modify results. Besides, I have found that one great difference between a skillful man and a bungler is that the former carefully attends to all the minutiæ, and the sum of these little things is a complete product.

In view of all this, I long ago adopted a method of handling gold foil which has proved eminently satisfactory to me. Perhaps this article will be incomplete if I do not state it, even at the risk of prolixity.

In the first place, by an arrangement with the manufacturer, a batch of foil is beaten out specially for me, and my order is never for less than a quarter of a pound. When the foil arrives it is tested, and if I find it to my liking I usually secure the rest of the batch, if there be more, at once, even though it involves the outlay of considerable money. I thus have a stock on hand of uniform quality, sufficient to last me for a time, and am not obliged to vary my annealing. Foil will deteriorate with time, by surface condensation probably, but by keeping it in a dry place, carefully shut up, and by avoiding atmospheric changes, this is reduced to a minimum. My foil is kept in the original packages, in my office safe, and that is never allowed to remain entirely shut long enough to gather moisture.

My apparatus for annealing consists of a tray of the finest thin sheet steel, with symmetrical indentations for holding the pellets, so that they may not come in contact with each other. Probably mica would be better for the tray, and, indeed, I have used it, but it burns out after awhile, and, besides, it can not be indented like the steel or iron sheet, and the pellets get in contact and cohere, thus causing trouble; I have, therefore, for a long time used only the iron tray. Beneath this tray is a small Bunsen burner, to which it is attached, the tube not quite as large as that of a common gas burner. The relative supply of gas and air to this is so arranged that the flame can be turned down to the smallest point. The flame which I ordinarily employ is not more than an inch high, and proportionally small, while the combustion is so nearly perfect that it is difficult to tell by sight whether or not it is lighted. It gives me an average temperature for annealing of about 700 degrees F. Some foils will anneal sufficiently at 600, while others require 800. Gold at a cherry-red heat is about 2,000 degrees F.

The annealing tray and burner are permanently attached to the axis of my circular operating table by a revolving gas-bearing arm, which supports the tray at its extremity. I can thus bring my annealing apparatus quite near the patient while operating, and swing it to the opposite side of the table when no longer wanted. At the commencement of an operation the office girl fills the tray with pellets of the size which I indicate, but the gas is not yet lighted. The base of the filling and the larger part of its body, unless it be the restoration of contour, is completed before lighting the gas, because I can secure better adaptation to the walls with unannealed foil. But when I get in the neighborhood of the masticating surface, or that which is exposed to attrition, and which, therefore, demands a harder finish, or when I begin any contour work, the gas is lighted, and while the gold is gradually heating I continue the operation, thus obtaining a gradual transition from soft to annealed foil.

I find many advantages in this method of handling gold which, aside from its greater convenience, are chiefly summed up in the avoidance of the objections to the open flame urged in the preceding paragraphs. It is astonishing how small a flame will answer every demand when the temperature is steadily and equally maintained. Of course gold of different characteristics will require different temperatures, but upon the receipt of a batch of foil it is carefully tested to see what degree of heat produces the best results, and the flame is, by a separate stop-cock, carefully adjusted, so that whenever it is turned on and lighted I always get the same heat, until a different quality of foil demands a readjustment of the flame. If any careful observer will try this method he will be astonished at the sensitiveness of his gold to even a slight change in the temperature at which it is annealed, and I believe it will suggest to his mind some new thoughts concerning the filling of teeth with gold.

I regret that I can not now spare the necessary time to make this article shorter, for I am well aware that it is too long for profitable reading. Very truly yours,

W. C. BARRETT.

ODONTOMES.

BY J. V. METNITZ, M. D., VIENNA, AUSTRIA.

[Translated from the Oesterreichisch Ungarischen Viertel-Jahrsschrift fur Zahnheilkunde. By Louis Ottofy, D. D. S., Chicago, Illinois.]

In this article a number of cases of anomalies of tooth formation will be minutely considered. The information thus derived will be utilized as nuclei for an explanation of the causes leading to the appearance of these malformations of tooth structure, as well as their manner of formation.

I.

In July, 1887, Professor Dittel received, at the surgical section in Vienna, a boy who had a painful swelling on the lower jaw.

The patient, Samuel Wolf-Ziegler, 11½ years of age, born in Kolomea, Galicia, stated that the left side of his lower jaw was gradually swelling, being accompanied by a steady increase of pain. This condition had existed for 1½ years. Mastication became more difficult and painful, and the swelling increased so rapidly that recently the patient could barely open his mouth. In this condition the boy, whose physical development has been slow, visited the hospital. A number of examinations by different persons failed to lead to a proper diagnosis.

My friend Dr. Brenner, first assistant physician of said section, who suspected the nature of the lesion to be a malformation of some tooth, invited me to examine the case. I found a swelling on the left side of the face. The sub-maxillary glands were infiltrated to some extent. A slight immobility of the lower jaw was also present. The shedding of the teeth and the growth of the dentures had taken place normally, for at this age (11½ years) the boy had all the teeth which he should have, except on the right side, where in place of the second bicuspid the second temporary molar, in a decayed condition, was still present, and on the left side the cuspid and the first bicuspid had not yet erupted, while the temporary cuspid and both temporary molars were still present. The permanent incisors were five in number, one being a supernumerary.

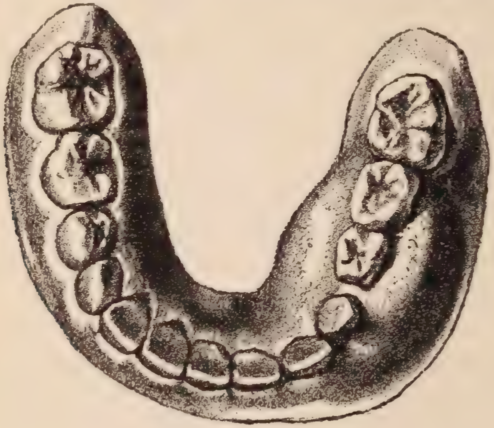

Fig. 1.

The entire portion of the lower jaw in the neighborhood of the three temporary teeth of the left side was considerably thickened, equally toward the cheek as well as toward the tongue. On pressure the swelling was painful; a marked periostitis being present. The body of the swelling was as hard as bone, and unyielding. (See Fig. 1.)

The presumption that the disturbance was due to a retention of the germs of permanent teeth was fully justified by the condition. The removal of the corresponding temporary teeth seemed absolutely essential.

I extracted the second temporary molar which was loose, without any difficulty, but with the first temporary molar the entire swelling, as well as the temporary cuspid, was movable. On moving the tooth with an elevator, the mucous membrane separated in all directions, and I succeeded in extracting a hard globular formation to which both teeth were firmly united.

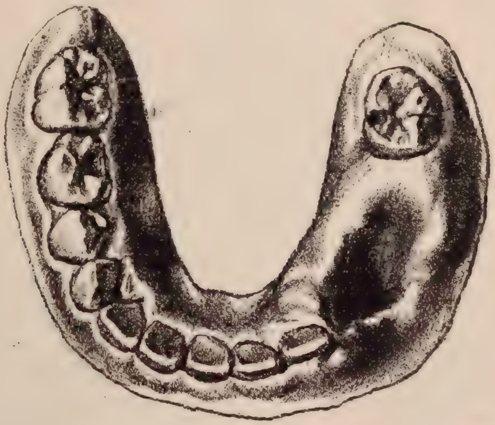

FIG. 2.

The left lateral incisor, which threatened to become displaced with the mass was successfully pressed into its alveolus with the index finger of the left hand, while operating, and it eventually became re-attached. At the same time some pus was discharged. It was fortunate that the operation was commenced with the removal of the second temporary molar; for the space thus created made it possible to remove the entire growth, which, by its extension under that tooth, had caused the entire absorption of its anterior root.

The floor of the wound was perfectly clear, and neither during the change of the iodoform gauze dressing, nor even at any time before the closure of the wound was it possible to find any germs of any of the permanent teeth. Five days after the operation the jaw appeared as shown in Fig. 2.

Eight days after the extraction, the patient was dismissed.

The removed growth is about the size of an Italian cherry, its diameter from cheek to tongue was 22 mm. The mesio-distal diameter was the same. In height it measured 20 mm. The weight of the tumor including the two teeth, and being perfectly dry, was exactly five grams.

The external surface was rough, somewhat inflated and provided with a number of furrows. In its fresh condition it was entirely covered with periosteum which tenaciously adhered to it, and which covered the small openings and furrows; this covering was removed with considerable difficulty.

After the removal of this layer of connective tissue resembling structure and the remains of the blood vessels, we have a light gray formation of bone which looks yellowish-brown when dry. In some portions, especially on the labial and upper surface (Fig. 3), it appears more dense than in other parts, such as the lingual and lower surface (Fig. 4), where it is very porous.

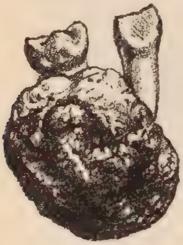

FIG. 3.

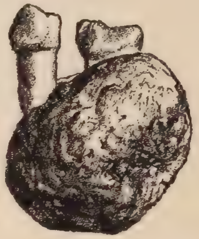

FIG. 4.

On that side which faced toward the tongue, two furrows with still deeper depressions may be seen; on the distal and inferior surface a large round shallow depression with a number of openings is visible. These were the points of entrance of the vessels supplying the tumor with nutrition. A mesio-distal cross section of the tumor and of both teeth after being polished shows the growth to be almost circular; and in structure it appears to be a dense bone-like substance. With a magnifying glass openings may be seen in many parts, which served for the passage of vessels and connective tissue.

The root of the temporary cuspid is free on its mesial surface. The roots of the first temporary molar are immovably united to the surrounding tissue. The anterior root appears intact, while more than one-half of the posterior has been resorbed. Casually, it would appear to the examiner that a calcic deposit had taken place, overtaking the resorption of the roots, which no doubt has been initiated in all of the roots, and which is visible to the naked eye in the first temporary molar, whereby the teeth were permanently fixed.

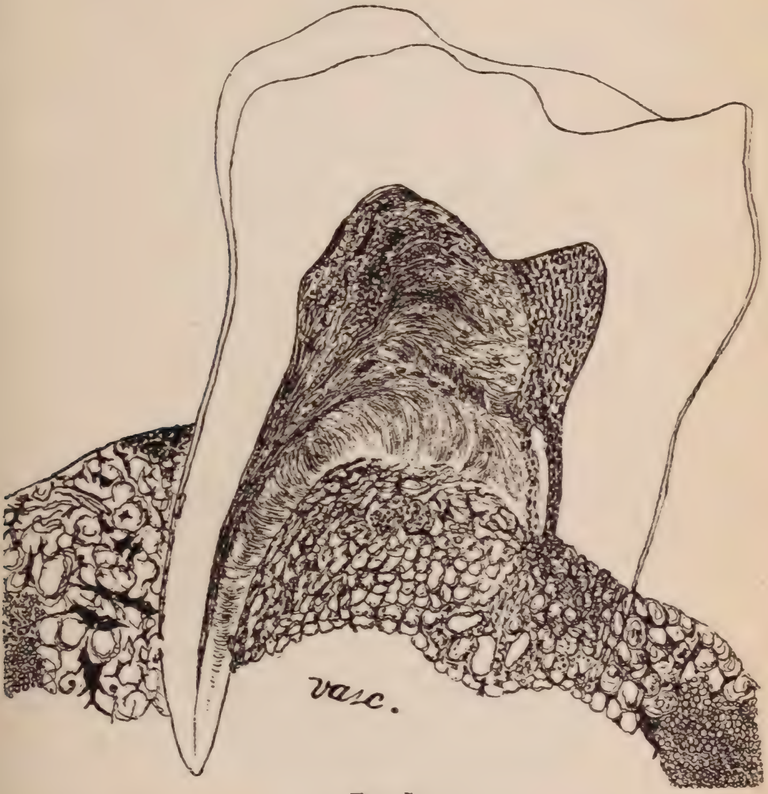

FIG. 5.

The two permanent teeth which are missing on the left side of the lower jaw were imbedded before their eruption, in such a manner, that the two roots of the first temporary molar mesio-distally surround the germ of the first bicuspid, that the latter was firmly held by the roots of the temporary molar before absorption of these roots had commenced. The germ of the cuspid lies in a median position deep in the bone, with its axis so placed, that it would be ready to erupt on the removal of the temporary cuspid. The latter tooth, however, is considerably crowded by the permanent incisors which are much wider than their temporary predecessors. The crown of the unerupted first bicuspid is much narrower than the first temporary molar, hence the additional space created by the change is advantageous to the permanent cuspid, which would erupt somewhat outside of the line but would take its place within the line after the temporary cuspid has been shed. In this case, however, the first bicuspid has not erupted—that is it has not taken the place of the first temporary molar; in addition, instead of four incisors there are five normal permanent incisors present.

When these conditions are taken into consideration it is not difficult to assign a cause for the appearance of this malformation resulting from the retention of the deformed germs of the permanent cuspid and the first bicuspid.

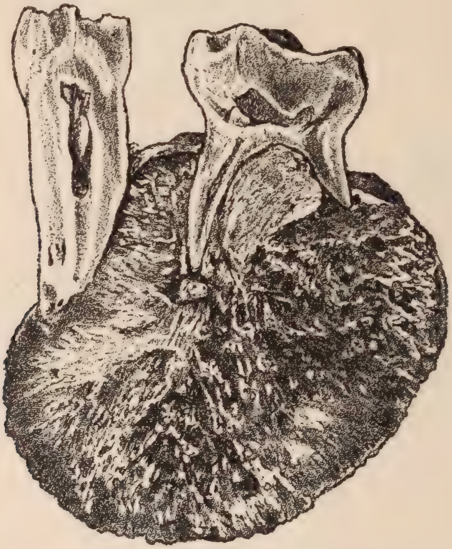

Fig. 6.

If a cross section be examined under a low power we might be inclined to the belief that the greater portion of the tumor consists of bony substance. Under a high power the entire central mass does not appear to be a genuine bone formation.

We find irregular spaces, which are filled with lime salts; in some parts the structure is very vascular; numerous canals, vessels and connective tissue abound. There are also portions of the pulp which are tinged with blood. (Fig. 5.)

This is the appearance of the tumor in its entirety, from its uppermost to its lower portions, and the character of the tissue is unchanged in even the lowest portion of its periphery. (Fig. 6.)

Its lateral portions, however, are of a different structure. What might be considered vascular spaces of bone in these sections, appear under a high power as more or less distinct interglobular spaces. These are especially noticeable on the upper lateral surfaces. In descending we find numerous globular masses near to each other, and to the periphery.

Rudimentary dentine is present, having been arrested in development and hence appearing as globules and interglobular spaces.

Well developed bone substance will be found along the course of the vessels, and the bone cells are arranged in rows. Genuine bone substance is also present, especially in that locality where the greatest absorption of the root has taken place. This formation also extends into the pulp chamber of the temporary tooth. The remainder of the pulp chamber is filled with a hard mass which is recognized to be newly formed dentine.

The appearance of the bone substance just mentioned is identical with what takes place in connection with the process of resorption of the majority of temporary teeth.

[TO BE CONTINUED.]

DESTROYING AND REMOVING THE PULP.

BY DR. I. A. FREEMAN, CHICAGO, ILL.

In bringing this subject before you this evening I do not expect to add anything to the thorough treatment it has received by the members of the dental profession, in the years past, who so ably discussed their favorite methods and have left to us their records.

I do not find in the current literature very much change in the general manner of devitalizing the pulp from that of twenty-five years ago, but in the therapeutical treatment considerable changes are noticed.

Some new remedial agents (to the dental profession at large) have been introduced, but mainly we depend upon the same agents now as then.

A more intelligent understanding of the reflex disturbances manifested in those ailments and troubles incident to irritation of the pulp, has been brought about through the stimulus or impulse given to many members of the profession (I might say nearly all) who desired to place the profession of dentistry on a higher plane.

And while there has been very great improvement in this respect, we still hold fast to many of the principles of "Theory and Practice" of the past.

When called upon to devitalize the pulp of any tooth, the manner of procedure will depend upon conditions—whether the exposure be of long standing or recent, for if of long standing there probably has been pathological change of the pulp, rendering a certain course of treatment necessary before that of devitalization ; whether if there be such change it be in the form or state of congestion, or hyperæmia, whether hypertrophy has resulted, whether a portion of the pulp be in a putrescent condition, etc., for while these conditions will, to most practitioners, indicate that devitalization is best, and for the most part will result, still there are other steps indicated as preliminary or preparatory.

We should make it our object to devitalize the pulp with the least possible pain to our patient, and with as little loss of time to ourselves as may be.

Then again we desire to avoid complications. For instance, discoloration caused by infiltration of the tubuli by disorganized blood, and again by the complication of undue irritation of surrounding membranes. Hence, when the case has been decided and we have determined to destroy the pulp, we should endeavor to reduce the inflammation and restore the normal conditions as nearly as we may deem desirable, and then proceed to the work in hand.

There are two general processes by which this result is reached, namely: that of immediate extirpation by use of instruments direct, while the patient is in a partial or complete state of anæsthesia, or by the use of a local or circumscribed anæsthetic, as for instance, muriate of cocaine crystals or powder dissolved with carbolic acid, in the carious cavity in the anterior teeth and allowed to remain from ten to thirty minutes ; this will in many instances produce perfect anæsthesia of the pulp, if the exposure be recent. I say anterior teeth because this has been my experience, while with the molars I do not find the same result.

The other process is by the use of an escharotic.

Each of these processes has its disadvantages and its peculiar difficulties.

There are several escharotic agents that may be used, but of them all, arsenious acid is usually employed and it has been in general use for more than fifty years, as stated by Taft in his work on Operative Dentistry. Dr. Spooner was the first to use arsenious acid as an agent to destroy the pulp of a tooth, and he states that this was in 1836. He mentions that other gentlemen were said to be using it at about that time. Harris' Principles and Practice mentions that Dr. Maynard is spoken of as having performed, by using arsenic, the operation of devitalizing and removing the pulp. (A common occurrence when he found it exposed and desired to fill the tooth.) His procedure was almost identical with the practice of to-day.

Other gentlemen are also mentioned as having used arsenic for the same purpose, at about that time, and it would seem from remarks by the editor, that this is about the time it was first introduced as an agent in devitalizing the pulp ; that is, about 1836 to 1838. In the same connection Dr. Arthur, at a later date, is mentioned as having used the actual cautery, also cobalt, as agents to destroy the pulp.

There are serious objections to the use of arsenic, and it should not be applied carelessly. The patient should be made aware of the importance of attending minutely to directions with reference to it, and the operator should use due precaution by way of protection against accident. It is better to be over-cautious, even, than to be obliged to undertake the process of repair of injuries resulting from carelessness and neglect.

The rubber dam should be applied, the cavity thoroughly dried and cleansed of all extraneous matter, the pulp fully exposed by removing the decayed tooth substance, so that the escharotic agent may be placed directly in contact with the pulp. Arsenious acid in combination with morphia, equal parts (either sulphate or acetate, some preferring one and some the other), and carbolic acid in sufficient quantity to make a thick paste, is recommended. muriate of cocaine may be added. The latter are used for their anæsthetic effects, and serve us very satisfactorily in this capacity.

Arsenious acid, iodoform and carbolic acid crystals, in equal parts, and alcohol sufficient to make a thick paste, are recommended by the latest works upon Operative Dentistry. The precise mode of action of arsenious acid is not well understood. It is a powerful escharotic, "so much so that although applied quite remote from the pulp, and in very small quantities, even so minute as to escape detection by the most delicate tests, it seems to have the power to destroy the pulp when the same quantity would seem to have no influence upon other tissues." Probably the action is in the line of irritation and consequent stimulation of the circulation, causing, as is thought by some, strangulation, and later, disorganization of the corpuscular elements of the blood, infiltration of the tubuli, resulting in some instances. Hence the peculiar discoloration sometimes met with when the pulp is not fully exposed, so that the disorganized blood can not escape. Dr. Ingersoll thinks that thrombosis resulting from the peculiar irritation causes the death of the pulp, and accounts for the gradual death toward the apex in this way. It is not improbable, because, as he says, if by strangulation, then devitalization would be complete from the apex or point of strangulation, which we know does not occur.

The mode of applying the paste or agent for the destruction of the pulp is, by many, to use a small portion, working it carefully down upon the pulp and pricking it into the pulp tissue with a small instrument. It should be covered by some kind of stopping material, to keep it from working out upon the tissues surrounding the tooth. The material used should be impervious to the fluids of the mouth. Cotton, saturated with sandarac varnish, is used for this purpose.

A very good plan is, to fix a metallic or other inflexible cap to cover the exposed pulp and paste, so that there may not be pressure directly upon the pulp by the stopping used, which may be forced down upon it while the process of mastication is going on.

It is a very good plan to allow the rubber dam to remain a short time after the application is made. Evaporation of the alcohol will take place to some extent, and the mass become stiffened so as to adhere to the margins of the cavity, and more perfectly close it against the fluids of the mouth.

In cavities where but little protection can be had to retain the paste and stopping (as upon broken or fractured incisors) oxyphosphate of zinc may be used. It may be used in all cases, but owing to its hardness and the consequent trouble of removing, it is not best to use it generally. Gutta-percha and Hill's Stopping are recommended by some, but I do not find either a desirable material to use where there is exposure of the pulp.

The application should be removed in from twenty-four to forty-eight hours, the cavity well cleaned, the pulp cavity fully opened, and if the pulp be in a sufficiently insensible condition to admit of it, we should cut it away with the engine bur at this time.

A light application should then be made to the remaining or root portion of the pulp, and stopped as before, and the patient instructed to return in twenty-four hours. At this sitting the remaining portion may be removed, if not too painful. If we are not able to do so, the application should be repeated, and may be allowed to remain forty-eight hours longer, but it would be better to see the patient again in twenty-four hours.

At the next sitting, if unable to remove the remaining portion, an application of some mild antiseptic agent (usually eugenol or oil of cloves is preferred). This application may remain four or five days, and may be repeated until sloughing has taken place at the apex, when the root branches may be removed with little difficulty, using broaches prepared by filing, those we find at the dental depots being too large to pass up the canals to the apex. Broaches should be barbed sufficiently to catch up the tissue and wind about the broach, as it is turned carefully, so as not to break the broach off in the canal by too vigorous twisting.

After the canals are perfectly cleaned, disinfected and dried, the case is ready for the introduction of the filling material. The orifices of canals should be enlarged by proper drills to facilitate the introduction of the filling.

Two other methods are mentioned by Evans on bridge and crown work:

1st. Instantaneous devitalization by use of an anæsthetic, nitrous oxide preferred. A smooth broach is passed to the foramen, and by rotation the pulp is lacerated. A pellet of cotton, saturated with carbolic acid, is instantly forced up the canal. The pulp is said to be found in twenty-four hours in a coagulated mass, and is easily removed entire.

2d. Orange wood, prepared by shaping to fit the canal as near as may be, and saturated with carbolic acid, is quickly driven into the canal to the apex. When the wood is withdrawn the pulp usually adheres. Should it not do so, the wood is quickly re-inserted, and cut off. It is then drilled out with Gates-Glidden drill, the pulp coming away at the same time. This manner is recommended after excision of the crown, preparatory to placing a bridge or crown upon the root thus treated, and is mostly confined to teeth with single roots, and where the exposure is recent. I can not speak from experience of either process.

DENTAL ELECTRICS.

BY C. EDMUND KELLS, JR., D. D. S., NEW ORLEANS, LA.

Since writing the article upon this subject which appeared in the DENTAL REVIEW of March, 1888, several additions to and improvements in my office plant have been made, a description of which may not be amiss, considering the general interest shown upon the subject.

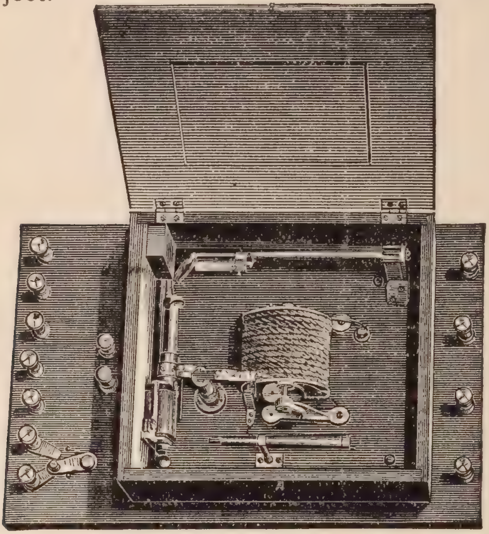

FIG. 1. ELECTRIC CABINET.

The constant aim of my work in this direction being to have as little display of apparatus in the operating room as possible—to simplify each piece of mechanism to its utmost limit—and in fact to continue in the same line upon which I orginally started, which was to devise and perfect a Dental Electric System efficient to the highest degree, and withal so simple and reliable as to reduce the time required to keep it in order to the minimum—an electric system adapted to fully meet the wants of *any operator* whose demands upon his time warrant the use of time and labor-saving devices—the basis of which was the discarding of the ever troublesome and unreliable battery, and the adoption of the current from central electric light and power stations in its stead.

The switchboard heretofore described and illustrated (DENTAL REVIEW, March 1888) has now been replaced by the electric cabinet shown open in Fig. 1, and to it are brought for distribution the two pairs of wires carrying the differentiated currents derived from the shunt box. Upon the reel shown in the center is coiled the conducting cord. When needed, as the cord is drawn out, the reel revolves and is automatically locked when any desired length is unwound. When done with it a latch is raised, and the reel automatically rewinds it, thus rendering it free from the liability to kink or break, and keeping it within a small compass and ever ready for use. The method of its attachment provides for its being constantly "connected up" with its proper terminals in the shunt box. To the left of the reel hangs an improved electric mouth lamp and reflecting mirror combined, no larger than the ordinary mouth mirror, designed to be used only for examinations and discriminating devitalized teeth. The mirror and the shield around the lamp are readily taken off for cleansing. In Fig. 2 is shown the lamp with shield removed.

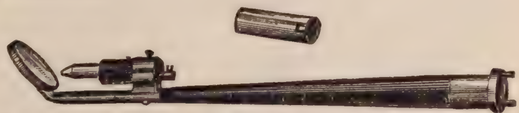

FIG. II.—ELECTRIC MOUTH LAMP AND REFLECTING MIRROR, COMBINED.

To the right is seen an improved form of the instrument shown by Dr. Whitefield for bleaching teeth. The bottom of the cabinet forms a shelf, upon which rests the electric mallet.

Here, then, we have a little cabinet containing the conducting cord, with its proper connections always made, and the various instruments to be used therewith. When not in use, the closed door keeps them out of sight and free from dust; when needed, they are always at hand and in good order. Below the cabinet proper are the binding posts for connecting the motor, brake and foot-piece, and also an extra pair, from which may be taken off the mallet current.

In Fig. 3 is shown a new "shunt" or "Resistance" Box. This, being round and made of oiled black walnut, with metal parts, nickel-plated, makes a much handsomer device than the square one previously used and described, although there is but one switch instead of two, as was before considered necessary. Both kinds of currents as described in my previous article may be taken from it, according as it makes contact with the upper or lower row of contact springs—the motor being governed by the lower contacts, and the lamp, mallet, etc., from the upper. Experience having demonstrated that the use of the ordinary electric lamp as a "resistance" does not possess, for constant use, the advantages over wire that I at first anticipated (Dental Review, March, 1888), I have discarded it, and now use the latter exclusively. The box, as shown in Fig. 3, only contains the necessary coils, to be thrown in or out of "circuit" by the switch, to vary the currents within certain predetermined limits. The balance of wire used as a resistance to *tone down* the current received from the central station to a safe degree (considering only our delicate instruments in this matter of *safety*) is put in the circuit in any convenient place. By this arrangement the shunt-box contains but a small proportion of the wire used, and so its size is much smaller than would otherwise be necessary.

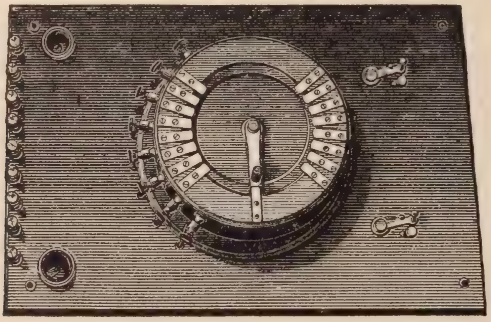

Fig. III.—Resistance Box.

The original designs of engine, foot-piece and brake have been adhered to, as their service has been perfectly satisfactory under all conditions. The motor formerly used, however, has been replaced by one of a later pattern made by the same company, than which nothing better could be desired.

The hopes which I so early expressed for the future of "dental electrics" upon this (then) new basis—the central station current—it must be evident will be fully realized.

Power in the dental office is the need of the day, and that need can only be met with in electricity derived from a source beyond the care of the consumer. In many places, smaller cities and towns especially, the generating stations are only operated at night; consequently during the day there is no current to be obtained. The secondary or storage battery, being now a practical success, may here be used, being charged at night by the service wires, and drawn upon during the day. While this would be an efficient one, it would not, of course, compare to a day distribution system.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

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DENTAL PRACTICE.

As this is the season of the year when the colleges have granted the right to practice dentistry to several hundred young men, and a few women, it may not be inappropriate to give a friendly word of advice and encouragement to those entering our ranks. A very few of the number graduated have, most likely, been engaged in practice for some years, either as assistants to others or on their own account. The great majority, however, start out with little or no experience of office practice, and very few have had any sort of business training. This is a grave defect in the education of most persons entering any profession, and it is particularly true of the newly-fledged doctors of dental surgery. A short experience in a general store as a clerk, or some other line of business, prior to engaging in the study of a profession, would be beneficial to most professional men. In place of this a few months spent in a business college, to acquaint one's self with the forms of doing business, or a limited experience in a real estate, railway, banking, or insurance business might be substituted for the business college training to the manifest advantage of the future professional man. Manual training schools will not supply the needed information required by doctors and dentists to successfully conduct the business aspect of professional life.

We do not wish to convey the idea that exact scientific knowledge is not to be sought after and acquired, but a happy combination of business acumen and experience added to a correct and full professional storehouse, fits the new aspirant for practice to be moderately successful from the beginning. If the hundreds of new dentists have not had experience in business life we recommend them to ask for counsel from successful men; not necessarily mercantile men, but successful lawyers, doctors, architects and brethren in their chosen profession. This will greatly aid them, and our advice to such as may see this article, would be to conduct the business of their profession in the most ethical manner; do not depart from the methods prescribed by the code of ethics of the American Dental Association. Join your local dental society; do all the reading in the fundamental branches of your profession that you can properly digest, and do a little of it every day in order to store your mind with useful and available knowledge. Subscribe for at least one dental and one medical journal, in order to keep abreast with current thought and practice. Be honest in your endeavors to serve all who apply for your services, and do not count time lost which you spend to correct your *own* errors in practice. If you follow the above brief directions you will soon be on the high road to success, professional and financial, both of which will be proportionate to your industry, honesty, and zeal in your chosen calling.

LINKING LOOSE TEETH.

Much benefit will result from the fitting of platinum or gold bands to loose teeth, and linking them together with solder and cementing the string of bands to the crowns of the teeth. Dr. G. W. Nichols, of Chicago, was the first to propose this method of holding loose teeth, in an immovable position, some dozen years ago, and we have since practiced this manner of securing teeth with great satisfaction. An impression is taken, and if the teeth are very close together they are cut off the model, and the narrow bands are fitted to the individual teeth, and held together with gum dammar, or other adhesive substance, tried on the natural, dried teeth, then soldered together and afterward cemented on the teeth. The rubber dam should be applied, and allowed to remain for some time, and then cut it off.

ILLINOIS STATE DENTAL SOCIETY.

Elsewhere will be found the notice of the twenty-fifth annual meeting of the State society at Quincy, the second Tuesday in May. We publish the complete programme also, to which we invite your attention if you contemplate being present. Dentists who can find it convenient from adjoining States are cordially invited to be present at this meeting.

OMISSIONS.

A few errors crept into the make-up of our double number, none of which were very serious, however. In the report of the meeting a few unimportant or very brief speeches were not reported by the stenographer, owing to the fact that he did not catch the names when speakers addressed the chair. The most important omissions were the report of Dr. Case's clinic, and the closing speech of Dr. J. H. Martindale on his paper, both of which are supplied in this number. In one of the speeches at the Banquet, reference was made to a filling of gold, inserted by Dr. Allport some thirty or forty years ago, which had been rolled into a ribbon and was passed around for view at the time. This speech was not reported at all, and consequently the interesting reminiscence was left out of the proceedings.

INTERNATIONAL CONGRESSES AT PARIS.

Forty-nine International Congresses have been provided for in Paris during the next six months, all under the sanction of the Government. Not the least profitable or interesting will be the Dental Congress, which will open September 1st in the Trocadero. We hope to see a large contingent of dentists from the United States. The topics for discussion are varied and of great importance to the whole profession. We will next month publish a list of subjects proposed. We invite, from Americans, contributions of papers, models, new appliances, and anything of interest for presentation to this great meeting.

CORRECTION.

The New York letter of our edition of January, 1889, contains certain allegations of unprofessional conduct concerning a prominent New York dentist, who was referred to as the plaintiff in a certain professional dispute likely to be heard before the Dental Society.

We have since found these statements were of a doubtful character; they were published without sufficient care to ascertain the facts, and we regret that they should have found a medium of circulation in our columns.

MERITED HONORS.

Drs. Charles R. E. Koch and James A. Swasey, of Chicago, have been honored by the Missouri Dental College and the Chicago College of Dental Surgery, respectively, with the degree of Doctor of Dental Surgery, honors worthily conferred and modestly borne.

DOMESTIC CORRESPONDENCE.

LETTER FROM DURAND & CO.

CORRECTION.

To the Editor of the Dental Review:

DEAR SIR:—It is due Durand & Co., and the dental profession, that Dr. L. P. Haskell's article on the "Electro Metallic Plate" in the "Items of Interest" for March, be thoroughly reviewed by one who knows how the plate is made, how the combination is formed, what metals are used, the proportions of gold to silver, or *vice versa*, and who also knows and firmly believes that the proper way to build up a business is by a truthful representation of the article under consideration. The plates are a combination of *pure* silver and gold, the entire plate being deposited, not as the doctor says, "two layers of silver and one of gold," but two layers of gold and one of silver; the silver being in the center of the plate, where it is thoroughly protected from the acids of the stomach and saliva by the gold, and by the same means the vulcanite is protected from the silver. It is true "they are attracting much attention among the profession." We do not wonder that the doctor "fears they will not prove a success" for that the days of swaged plates are numbered, seems almost too good to be true. We are sure the doctor's fears would be wonderfully allayed if he would order one plate and put it in practice where he could watch the results. Our work must rest upon its merits. We do not represent the plate as of gold, but instead, we take the utmost care that the dentist shall not do so either. The combination is good, and we find no difficulty in leading dentists to think as we do.

The fact that a large plate of this material "costs but seven dollars" is mainly owing to another fact—that, having to depend upon silver for strength we are enabled to produce a plate at less cost. Not a day passes but we have occasion to state that twenty carat gold is necessary to make such plates as we produce for seven and ten dollars, all complete, would cost the dentist from "twelve to fifteen dollars." We never put forth the idea that pure silver and pure gold are as "stiff and unyielding as eighteen carat gold plates," but we do put forth the idea, with telling effect, that we produce dentures of sufficient strength to satisfy representative men in the profession. Any dentist who solders our plates, or "heats them to a red heat," does so in opposition to our advice, and at his own risk (see our circular for metal attachment). "And right here" we would call your attention to an article in the June number of the *Dental Cosmos*, which recommends the use of rubber attachments in the place of solder, for fastening teeth to a metal plate. We have mended our plates by soldering and depositing with gratifying results. We are pleased to know that the doctor thinks our work is "beautiful and gives a perfect adaptation." While you should be "sure that you are not giving your patients a gilded silver plate," you should be equally sure to tell them that while the bulk of the plate is silver, there is sufficient gold used to make it practically a gold plate.

DURAND & CO.,
For E. E. CLARK.

"WATCHMAN, WHAT OF THE NIGHT?"

To the Editor of the Dental Review:

DEAR SIR—Dr. C. N. Johnson's "Watchman, What of the Night?" in the December DENTAL REVIEW, attracted my attention and admiration for its truth and candor. I believe such a presentation of facts is needed that we may "See ourselves as others see us, and from many a blunder free us."

Honesty, instead of pretense, must be the starting point for a change. Dr. Ottolengui, in his dental Ethics, in the January REVIEW says we are egotists. I believe many, of whom the charge seems true, act with a *conscious* assumption, trusting thereby to conceal ignorance. Many engaged in dentistry believe it impossible to grasp mentally, or by handicraft, the gifts of their superiors and substitute pretense. Others, capable of advancing, will not gain knowledge at the expense of a confession of ignorance.

Many dentists have risen to great popularity by bending all their efforts to gain promotion through social, political or other organizations, knowing that a non-discriminating public would consider their popularity mainly professional, and patronize them accordingly, and their opinions and practice go without question.

However, observant members of the *learned* professions readily recognize their lack of erudition and reasonably conclude that dentistry requires none.

'Tis a delusion to expect dentistry to be accepted as more than a trade when a majority of its representatives work for mechanics' wages and *warrant* their productions—where extracting teeth gratis and setting ready-made porcelain teeth on rubber plates constitute, in the main, their professional (?) labors.

Dentistry must be remunerative before it can attract brains and talent. When I speak of the defects in our profession I except, of course, the illustrious few whom we all honor and revere.

The demands of dentistry are ample to engage the talents of a Lincoln, Flint, Beecher or Forrest; its curative and restorative needs are sufficient to be represented by men, the peers of those in any profession. Yale and Harvard must occasionally produce them.

Honest, discriminating men are in the jury-box. Foreman Johnson has rendered a just verdict.

Respectfully, S. B. Brown,
Fort Wayne, Indiana.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.
ORGANIZED AUGUST 6, 1883.

ORANGE, N. J., January 28, 1889.

To the Editor of the Dental Review:

DEAR SIR: The correctness of my records as secretary of the National Association of Dental Examiners having been questioned by Drs. Gorgas and Wright in the correspondence heretofore published by you, I herewith send you a photographic copy of the revised list of colleges recommended to be passed by the association, and ask that you publish the same with the names attached—Drs. Wright, Rawls and my own—they being the entire committee appointed by the association for that purpose. This, it seems to me, together with the passage of the resolution before referred to, as shown by the record of the association (page 4) herewith sent you, is conclusive, and must be accepted as final, not only as to the incorrectness of the statements of Dr. Wright but as to the intention of the association, and as to its action in carrying that intention into effect.

As to the motives which constrained the National Association of Dental Examiners, at its meeting at Louisville, to drop the name of the University of Maryland, Dental Department, from the list of those whose diplomas they recommended the various State Boards to accept, instead, of an examination, I do not presume to criticise, or feel called upon to explain; suffice it to say that, for good and sufficient cause to the association appearing such course was undoubtedly pursued, and it is a matter of no wonderment that those affected should wince under the infliction of the rod.

In conclusion, let us consider what, if anything, the communications of the learned doctor seek to convey:

1. That there was no proper meeting of the association held at Louisville, whatever.

2. That if there *was* such a meeting, then certain delegates were not duly authenticated and authorized to act.

3. That, notwithstanding, if there was a meeting at which the delegates were authorized to act, then that no such committee report and resolution as that complained of was ever presented and passed.

4. And lastly: If such a resolution was passed, then that the delegates, all of whom were most intelligent and representative gentlemen, were incompetent, and did not know what they were doing.

Carry this absurdity one step further, and we should possibly be met with the assertion of the non-existence of Louisville.

Sincerely yours, FRED A. LEVY, *Secretary.*

THE TWENTY-FIFTH ANNIVERSARY OF THE CHICAGO DENTAL SOCIETY.

To the Editor of the Dental Review:

DEAR SIR: As one of the numerous guests favored by the rarest of privileges in being present at the above meeting, I wish to express my appreciation and refer to a few of its unique and exalted characteristics.

Promptly at 10 o'clock on the opening morning President Swasey's gavel fell and at his announcement the first number responded as did each succeeding one to the end of the third day with constantly increasing interest.

The omission, as far as practical, of forms and unnecessary discussion of parliamentary questions, which so often break interest in proceedings, was worthy of imitation.

There were no time-talkers. It was an exceptional body of representative men, disclosing the deductions of their advanced investigations of vital scientific truths.

The importance and originality of all papers and clinics was another marked feature. In short, it seemed a climax of methods to enlighten.

The Chicago Dental Society stands as a unit—as one family—

each member has the encouragement of the whole. United they stand, the secret of strength. Each a leader, all followers.

Chicago at this annual meeting should be the Mecca to which all dentists within a practical radius make a pilgrimage.

SENECA B. BROWN.

FORT WAYNE, IND.

ALUMNI REUNION OF THE UNIVERSITY OF MICHIGAN—DENTAL DEPARTMENT.

To the Editor of the Dental Review:

DEAR SIR—Will you kindly publish in your Journal the enclosed circular, for the benefit of your readers who are graduates of the University of Michigan, as it is the desire of the committee to bring this matter before all alumni of that institution. By so doing you will confer a great favor on Yours truly,

CHICAGO, ILL. L. L. DAVIS, D. D. S.

OFFICE OF L. L. DAVIS, D. D. S., 524 VAN BUREN ST.,
CHICAGO, April 2, 1889.

At the annual meeting of the alumni of the University of Michigan—Dental Department—held in Ann Arbor, June, 1888, a committee was appointed to take steps toward securing a larger attendance at the next meeting in 1889, and, in accordance with that intent, the committee beg your earnest co-operation, by your presence at the meeting, and by your sending the addresses of those alumni with whom you are personally acquainted, together with your own, to the above address. The committee ask that these addresses be forwarded at once, so that each alumnus may receive a personal invitation, for, owing to removal, many of the alumni have been lost sight of, and the list is far from perfect.

At the meeting, which will be held during commencement week in June, 1889, a special reunion of all classes previous to 1880 has been planned, and as soon as sufficient replies to this circular are received to warrant the formulating of special-class exercises, the committee will communicate with those signifying their intention of being present, so that it may be known who will be likely to attend. A varied programme of a scientific and social character will be prepared, and the exercises will close with a banquet.

An invitation is extended to classes graduated since 1880 to hold reunions at the same time, and the committee promise to gladly assist in their organization. The alumni meeting occurring during commencement week, will give those attending an opportunity to participate in the many social features of that occasion.

A prompt reply to this notice will lighten the labors of, and oblige

Yours sincerely,

L. L. DAVIS (CLASS OF '84),
Chairman of Committee.

DENTAL TRADE ASSOCIATION.

To the Editor of the Dental Review:

DEAR SIR.—In the DENTAL REVIEW of January 15, 1889, I find the following:

> "At the Union Dental Meeting, held at Boston, Mass., July 10, 11, 12 and 13, 1888, the following preamble and resolutions were unanimously adopted by a rising vote;
>
> WHEREAS, Certain manufacturers and dealers in dental instruments and materials have formed a combination known to the profession as the Dental Trade Association; and
>
> WHEREAS, The forming of such combination can only be an obstacle, retarding progress in the direction of scientific investigation, improvement and higher professional attainment; therefore
>
> *Resolved*, That we consider the forming of such combinations to be a reflection on the scientific and professional character of our profession.
>
> *Resolved*, That we invite all members of said combination to withdraw from the same, and we pledge them our hearty interest and support.
>
> Voted unanimously.
>
> That a copy of the above resolutions be sent to every Dental Journal printed in the English language, and their publication requested."

This preamble and resolutions, put forth by so respectable a body as the "Union Dental Meeting," a convention of dentists which may be presumed to include many of the most intelligent and best informed gentlemen in the profession, censures in severe terms a large number of manufacturers of, and dealers in dental goods, and seems to me to demand a reply in the interest of the parties censured.

Perhaps it is as well to consider the preamble and resolutions in the order as presented:

The first "whereas" merely asserts the existence of the Dental Trade Association. This association was formed about eight years ago, and now includes a very large proportion of the manufacturers and dealers in the country.

The object was to reform certain practices which had grown up in the trade that were neither reputable or profitable to the dealers, or profitable to their customers.

Its further object is to bring parties engaged in the same business together to promote a better acquaintance with each other, to afford opportunity for consultation and agreement upon such methods as will best promote and develop the business in which they are engaged.

The second "whereas" asserts that this association is an obstacle to progress in the direction of scientific investigation, improvement, and higher professional attainment.

This is a simple assertion without a word of explanation to show how it is causing this obstruction. It is certainly very difficult to discover any way in which the association of makers and dealers in dental instruments and materials, by meeting for the purposes described, can prove such an obstacle, or in any way exert an unfavorable influence upon the dental profession.

Do Drs. Andrews, Abbott, and others, eminent dentists, when pursuing their microscopical studies of the growth and structure of teeth, feel the Dental Trade Association a hindrance to their progress?

Do the men who are devoting all the hours they can spare from the practice of their profession, to the investigation of the more remote causes of dental disease, feel hindered or limited in their efforts because a number of persons engaged in making and selling dental materials meet annually to renew their acquaintance, discuss the conditions of the trade, and the best methods of conducting their special business?

I might multiply illustrations to include all those who are giving the best of their time and talent to raise dentistry from its mechanical status to the dignity of a curative science, founded on an intimate knowledge of the conditions of health, and the causes and proper treatment of disease in the organs upon which they operate, but enough has been said to answer the charge that the association is an obstruction to the profession.

On the contrary, there is one way in which, indirectly, it is an advantage to the profession.

The discussion of improvements in manufacture naturally leads to the production of more perfect instruments and materials and thus aids the dentist in making more perfect operations.

In regard to the first resolution, "That we consider the forming of such a combination to be a reflection on the scientific and professional character of our profession," I must admit I am puzzled, for, even if it affected the profession unfavorably financially, which, by the way, I shall prove it does not, I can not imagine any possible way in which these members of the association, whose relation to the dentist is the purely material one between buyer and seller, can be said to cast an unfavorable reflection upon the scientific or professional character of the dentist.

Unless the author of the resolution will favor us with an explanation, I shall be obliged to refer it to the "Society for Psychic Research" for solution.

The second resolution needs but few words. The Union Dental Meeting, while complaining that the Trade Association does in some occult manner, of which it gives no examples and cites no evidence, injure the dental profession in scientific and professional character, and hinders its progress, have in this second resolution not hesitated to directly interfere with an association which confines itself strictly to its own line of business, and in no way, directly or indirectly, meddles with the relations of dentists to each other, or to their patients.

So far I have considered the bare assertions of the Union Meeting, but there is one point in relation to the Trade Association that is generally the basis of complaint, that is not plainly mentioned in these resolutions, but might not unfairly be suspected of supplying animus of the whole affair.

This point is the assertion in private and in conventions, that the American Dental Trade Association was formed to raise the price of dental materials and draw the last dollar out of the dentists' pocket. This is the only plain, tangible accusation that has been brought against the association, and is one to be answered by facts and figures, and not by opinions.

In an investigation of the dental business some three years ago, that is about five years after the formation of the association, it was found that there had been a reduction in that five years in the price of various articles supplied to the dentist of from ten to sixty per cent. Since that time there has been a reduction on many other important articles for dental use, and the range would be now from ten to sixty-seven per cent, and much of this has been caused by *competition between members* of the American Dental Trade Association.

This is not a matter of guess work or opinion, but one of facts, that can be proved from the books of every dealer in the country. I do not now recollect a single article which has been advanced in price since the association was formed. If there has been any advances it has been in some matter so unimportant as to escape my notice.

Submitting the above to the candid consideration of the members of the "Union Dental Meeting," and the profession generally, I am content to close the discussion here, unless sins of a more tangible character can be charged to the association.

I wish to say that the Trade Association is in no way responsible for this communication, as it is written without consultation with any member thereof.

L.

REVIEWS AND ABSTRACTS.

A Text Book of Operative Dentistry. By Thomas Fillebrown, M. D.,D. M. D., Professor of Operative Dentistry in the Dental School of Harvard University, etc. Written by invitation of the National Association of Dental Faculties. Three hundred and thirty illustrations. Philadelphia: P. Blakiston, Son & Co. Chicago: W. T. Keener.

This book is well written, is usually direct and to the point, contains few or no repetitions, and the terminology used and the methods and principles of operating advocated appear to be for the most part correct. Some minor criticisms on these points might be made. On page 11 he says: "Three kinds of calcified tissue—dentine, enamel, and cementum—enter into the structure of a human tooth, and these, *though not absolutely peculiar to the teeth*, are appropriately called dental tissues." It would be very interesting in this connection to be informed where else than in the teeth enamel and dentine can be found. On page 12 the course of the enamel prisms is spoken of as being, "in a general way, from the dentine outward, at right angles with its surface," and "enamel has a definite cleavage." These two statements of fact have such a very important relation to the proper forming of the margins of cavities as to merit much more careful elaboration. Very little has ever been published, however, in relation to it, and its omission is not much to be wondered at. Prof. G. V. Black has directed attention to the importance of enamel cleavage with reference to the forms of cavities, more particularly, than any one else that I am aware of, but the results of his studies have not been published.

The author says the peridental membrane is probably but a single membrane. All remaining doubt on that question should be considered settled by the careful studies described in Prof. Black's book on the "Periosteum and Peridental Membrane." The anatomical description of the teeth, pages 18 to 24, is excellent, and is a welcome and much needed addition to the matters heretofore found in works on operative dentistry. The fifth cusp of the first superior molar is not mentioned.

The most serious fault to be found with the book is its extreme brevity upon some very important matters. In his preface the author says that for many years he "has felt that there was need of a text book on operative dentistry that should be confined more especially to the description of the manual operations required for the preservation of the natural teeth," and although he says further on that "the work is not intended as a substitute for larger works but as an epitome of the practical application of the principles discussed at length in more extensive volumes," it would be fair to expect that "manual operations" of such paramount importance as the opening of cavities, the removal of decay, and the formation of cavities for filling should be treated with more fullness of detail than is possible in two and a quarter pages for all of them. There is no reference, scarcely even an allusion, to the finishing and polishing of fillings and the proper shaping and contouring of fillings and teeth which are operated upon. The statement (page 61) that in proximal cavities in bicuspids "one retaining pit is usually sufficient and is better made at the middle portion of the cervical wall, as the dentine is thickest at that point," should be limited (in the opinion of this writer) to small cavities, extending but little way from the grinding surface, and having little lateral extension toward the buccal or lingual wall. If the cavities are larger near to the gum there is usually such lateral extension that retaining points can be more safely made and leave a stronger cervical border if they are made at the buccal and lingual corners of the cervical wall, at the extremities of the grooves in the lateral walls. What the author says about the shallowness of retaining points is true and important.

The portion relating to treatment of exposed pulps and of pulp canals, does not insist as it should upon the indispensible necessity for the use of rubber dam to insure against infection from the fluids of the mouth, and makes little or no account of the ever-present necessity for antiseptic or aseptic treatment whenever there is the possibility that the pulp, or the pulp canals, may be exposed to the access of infection. The procedures described for capping exposed pulps are those practiced by many good operators, but others equally good strenuously oppose them, and believe that strong creosote and carbolic acid are too severe applications for such a purpose, and that escharotics should be avoided and the antiseptics and disinfectants used upon living pulps, should be as little irritating as consistent with effectiveness.

Such very brief and casual descriptions of the operations of filling teeth (upon which most of a dentist's time is spent and on which his usefulness chiefly depends), fail to convey to students an adequate idea of the skill and accuracy, and especially the good judgment, that successful operating requires; or to suggest the dangers, accidents and mistakes that lie in wait to entrap the inexperienced operator at every turn.

Some disappointment will be felt that the work does not more fully present all the details necessary for a course of instruction in operative dentistry as a text-book should do, and which might have been done without making the book larger, if the 116 pages devoted to crown and bridge work had been omitted. N.

MICRO-ORGANISMS OF THE SALIVA.

Dr. Biondi. Translated from *Le Progrès Dentaire* for December, 1888, by Archibald Church, M.D.

The human saliva has toxic properties which are readily put in evidence by injecting mice, rabbits, or guinea pigs with from one-half to two c. of saliva. Dr. Biondi having sought the micro-organisms of the saliva has isolated five varieties, distinct in morphological and biological characters, and in the symptoms which they determine in inoculated animals.

They are: First, Bacillus salivarius septicus; second, coccus salivarius septicus; third, micrococcus tetragenus; fourth, streptococcus septo-pyœmicus; fifth, staphylococcus salivarius pyogenes.

The bacillus salivarius septicus has been more particularly the object of the author's studies; it is found more frequently than the others, and is especially abundant in the morning, the saliva then being slightly acid and more toxic. The bacilli are short and elliptic, having a length of from one to one and a half millimetres and a thickness of a little more than one-half millimetre; they are immobile, grouped in twos, (diplo-bacillus), in chains or masses, and surrounded by fringing protoplasm. They develop very rapidly in mice and rabbits, which perish in one, two or three days with an acute form of septicæmia, marked by elevated temperature, bloody diarrhœa, blepharitis, convulsions and coma, or after a period of cachexia, a sub-acute form of septicæmia lasting twenty or thirty days. Post-mortem one finds œdema and hæmorrhage in the localities where the inoculations were made, an intense injection of the parenchyma of organs, a voluminous spleen, etc. The blood contained in the cardiac cavities is ordinarily fluid and decolored, and this seems to be characteristic of the infection. In the sub-acute form of septicæmia there is disappearance of adipose tissue, anæmia of organs, alteration of blood which contains not so much micro-organism as detritus, and but few recognizable hæmic elements. In the acute form a large number of bacilli are found in the plasma of the blood between the red corpuscles.

This fact seems to confirm the opinion of Metschnikoff that bacilli in animals not refractory to their pathogenetic influence appear in the plasma between the globules, while in refractory animals they are contained in the leucocytes, but Dr. Biondi has seen the septic salivary bacilli equally in the plasma and between the red corpuscles in the animals (guinea pigs) which are refractory to their septic action. Cultures have been difficult to obtain. This bacillus grows in the presence or absence of air, in slightly acid media, on blood serum or nutritive gelatine, which it does not liquify, in bouillon which is unaffected by it, in sterilized milk and similar preparations. It has already been observed by various authors.

Pasteur has described the septicæmia the result of it "A new disease produced by the saliva of a child dead of rabies and transmitted from rabbit to rabbit." Sternberg made a micrococcus of this bacillus (micrococcus Pasteurii) but meanwhile he was unacquainted with its biological character. Foa and Uffreduzzi have described a micro-organism which seems analogous, but their description is too incomplete to affirm its identity. Frankel has found a micro-organism in the sputa of pneumonia which resembles the salivary bacillus and which also exists in the fluid exudate of cerebro-spinal meningitis, but this micro-organism is pathogenetic for guinea pigs and consequently differs from the septic salivary bacillus to which they are refractory.

The coccus salivarius septicus has been encountered once only, in the saliva of a woman the subject of puerperal septicæmia. Guinea pigs inoculated therewith die on the fourth or sixth day, and in the blood and tissues the cocci are found isolated or in groups. There exists no trace of inflammation about these groups. The coccus therefore is not phlogogenic but causes death mechanically. It is readily cultivated, forming whitish colonies devoid of capsules.

The micrococcus tetragenus, in an examination of fifty persons, has been found three times. Of these three persons two were healthy, with the exception of dental caries, while the third had erysipelas of the larynx. This micrococcus kills mice and guinea pigs in from four to eight days. It is the micrococcus found by Koch in tuberculous cavities, the characteristic colonies being well known. The streptococcus septo-pyœmicus was observed in three persons, one presenting phlegmonous angina the others erysipelas of the larynx. It does not show characters which are adequate to distinguish it from the little chains of the streptococcus of erysipelas, or from those of puerperal metritis. It has the same colonies and presents the same inconstant results in experimentation upon animals.

The staphylococcus salivarius pyogenes: Beside the two varieties of staphylococcus aureus and albus, which cause suppuration in inoculated animals, the author has discovered a third, the salivarius pyogenes. It is extremely small and always isolated. Cultivated in gelatine it liquifies it, but much more slowly than the staplylococcus, albus or aureus, and besides forms on the surface a characteristic pellicle. Inoculated in animals it determines an inflammation followed by localized suppuration from the sixth to the seventh day, after which resorption occurs. The affection has always been localized and never followed by death. Progres medical.—From the *Progrès Dentaire*, Dec., 1888.

PARREIDT'S COMPENDIUM OF DENTISTRY. A Compendium of Dentistry for the use of Students and Practitioners, by JULS. PARREIDT, Dental Surgeon to the Surgical Clinic at the University of Leipsig. Authorized translation by Louis Ottofy, D. D. S., Lecturer on Physiology, Chicago College of Dental Surgery. With Notes and Additions by G. V. Black, M. D., D. D. S., Professor of Pathology, Chicago College of Dental Surgery; with numerous Illustrations. 8vo, cloth; pp., 228. Price, $2.50. W. T. Keener, Publisher, Chicago.

This book is written, announces the author, to meet the requirements of the physician and medical student, and in that light it must be adjudged.

The best reason for the appearance of a technical work or translation is a demand for it, and now that dentistry is taught, at least by a course of lectures, in nearly all our medical schools, a text-book to accompany and complement such instruction is a desideratum. This need is fairly well met by the translation of Parreidt's Compendium, and nothing better for the purpose has appeared. It is however to be regretted that a somewhat similar treatise has not come to us from the hand of an American, for it must be conceded that dentistry finds its highest exemplification in this country. The numerous additions by Prof. Black add much value to the text, yet inasmuch as they generally point out advances on the methods or theories of the author, as well as more desirable plans of treatment, they serve to show the weaknesses of the original for which their substitution is desirable.

The contents are well arranged, and the various subjects are perhaps as fully treated as could be expected in a condensed work of this character. A more extended consideration of the fractures of the jaws, the dislocation of the inferior maxilla and the neoplasmata of this region is desirable. In this day too of antiseptic, or better, aseptic, surgery, the restriction of this most important matter to a half-page under the heading "Disinfection of Instruments," is to be deprecated. Moreover, the only recommendation is for the use of a little carbolized oil upon the instruments *after* the operation. While this may suffice for the tools, it is a rather scant protection for the patient.

As compared with English text books a lack of definitions is noticeable. For the purpose of students at least, the great value of starting the consideration of a subject with a clean cut, well constructed definition can not be doubted. It furnishes at once a text for the author, and a concise outline for the student to be amplified and elaborated in the following discussion of the subject.

The translator has done his work faithfully, and with evident care. Very rarely does he allow the idiom of the original, that *bete noire* of such a task, to emasculate the king's English. Page 41 presents this peculiar sentence at the opening of the chapter: "A fracture of a tooth may take place either by direct force against the teeth (could it otherwise be direct?) or indirectly by any connection (?) sustained by the lower jaw." The typography and make-up of the volume is admirable, reflecting much credit upon the publisher.

As a whole, the work is a valuable contribution to medical literature, and comes to fill a want. It should be in the hands of every medical student and practitioner, and doubtless will lead to a much more intelligent treatment of dental troubles as they fall under the observation of the physician. We may, however, indulge the hope of seeing originate in our own language and country a treatise more didactic, systematic and comprehensive that will thoroughly cover this promising field. C.

TRANSACTIONS OF THE INDIANA STATE DENTAL ASSOCIATION—THIRTIETH ANNUAL MEETING, TERRE HAUTE, JUNE 26, 1889, CONTINUING FOUR DAYS—PUBLISHED BY THE ASSOCIATION.

This volume, though late in coming to hand, is a decided improvement upon some of the previous issues, and is really one of the best volumes of transactions published during the year 1888. The society is to be congratulated upon the evidence offered of the class of work done by its members, and the successful meeting held. The volume contains ninety pages, which includes a complete list of the practicing dentists of the State, so that the actual pages of the meeting is but 74. The illustrations of Dr. Comstock's paper, and the Manikin frontispiece, form a very valuable part of the vol ume. The typography is good, but there still remains cause for criticism in the publication of miscellaneous business among the essays and discussions, and which should have a place by itself, either at the beginning or end of the volume. The essayists contributing are: Dr. E. J. Church, S. B. Jarard, L. W. Comstock, F. Overholser, Louis Jordan, Eugene S. Talbot, Geo. W. Williams, and J. W. White. Dr. Swafford, of the Vigo County Medical Society, contributes a "poem."

SEVENTH ANNUAL REPORT OF THE ILLINOIS STATE BOARD, OF DENTAL EXAMINERS, 1889. Chas. R. E. Koch, Secretary, Chicago.

This annnal report seems to have been carefully compiled, and it contains some interesting figures of the number of dentists by counties, their nativity and the colleges from whence diplomas were received. There is an alphabetical register and a list of dentists by towns. In looking over the report we find the names of deceased dentists, in several instances. It is stated that thirty-eight registered and licensed dentists hold medical degrees. We have searched the list very carefully and find forty-eight. It is quite probable that some of them were not held at the time the holders were registered or licensed, and they have since obtained the medical qualification. Any dentist in the State who has not received a copy can procure one from the Secretary, we presume. It is well worthy of perusal.

Books Received.

Harris' Principles and Practice. Edited by F. J. S. Gorgas, M. D., D. D. S.; 12th edition. Very much enlarged, with a full page plate, and more than 1,000 illustrations. P. Blakiston, Son & Co. (Too late to review this month.)

Ringer's Therapeutics. 12th edition. By S. Ringer, M. D. Wm. Wood & Co., New York; W. T. Keener, Chicago.

Pamphlets Received.

Recent Innovations in the Therapy of Syphilis. G. Frank Lydston, M.D., Lecturer on Genito-urinary and Venereal Diseases in the College of Physicians and Surgeons, Chicago, Ill.

A Bill for an Act to Amend an Act entitled "An Act to Insure the Better Education of Practitioners of Dental Surgery, and to Regulate the Practice of Dentistry in the State of Illinois." Approved May 30, 1881. Introduced by Dr. Blair.

DENTAL COLLEGE COMMENCEMENTS.

VANDERBILT UNIVERSITY—DEPARTMENT OF DENTISTRY.

The commencement exercises of the Department of Dentistry of Vanderbilt University were held in the Masonic Theatre, Nashville, Tenn., February 20, 1889. The address on part of the faculty was delivered by Prof. D. R. Stubblefield, A. M., M. D., D. D. S., and the valedictory address by Dr. J. McClark, of Alabama. The number of matriculates during the past session was ninety-five. The degree of Doctor of Dental Surgery was conferred by S. C. Garland, L.L. D., Chancellor of the University, on the following named (28) students:

C. L. Boyd, Alabama.
O. M. Huestis, Dakota.
R. P. Henderson, Alabama.
J. O. Templeton, Tennessee.
A. W. Trotter, Tennessee.
Rob't Kettner, Michigan.
J. C. McDavitt, Kentucky.
O. McMeeley, Pennsylvania.
G. R. Crain, Tennessee.
W. A. Guess, Mississippi.
A. A. McClannahan, Tennessee.
J. C. Goodwin, North Carolina.
R. M. Walker, Illinois.
J. H. Allen, Alabama.
S. W. Johnson, Mississippi.
J. W. Ford, Kentucky.
T. C. Burgess, Tennessee.
W. H. Helden, Alabama.
J. McClark, Alabama.
O. C. Farish, Alabama.
J. B. Haddan, Kentucky.
Wm. Norconk, Michigan.
J. L. Tichenor, Texas.
S. H. McKee, Kentucky.
W. B. Desobry, Louisiana.
D. F. Orr, Virginia.
J. C. Green, Alabama.
J. C. Wasson, Tennessee.

IOWA STATE UNIVERSITY--DENTAL DEPARTMENT.

The seventh annual commencement exercises of the dental department of the State University of Iowa were held at the Opera House, Iowa City, Iowa, Monday evening, March 4, 1889. The annual address was delivered by the Hon. Albert W. Swalm. The degree of Doctor of Dental Surgery was conferred by President Schaeffer of the University, on the following named (21) persons :

Emma E. Auger, Brooklyn Iowa.
George Burt Colt, Cambridge, Pa.
E. Cotton, Waterloo, Iowa.
Wm. Gilmore Clark, Cedar Rapids, Ia.
Emma Eames Chase, St. Louis, Mo.
George E. Diehl, Marshalltown, Iowa.
Kern M. Fullerton, Waterloo, Iowa.
Arthur B. Glasier, Milwaukee, Wis.
William Humphrey, Carroll City, Iowa.
Irving Burton-Kinney, Waterloo, Iowa.
Ralph B. Murray, Sioux Falls, Dak.
F. C. Noyes, Mt. Sterling, Iowa.
James A. Ogg, Bristol, Minn.
Edward Peek, Waterloo, Iowa.
Albert D. Reed, Seargent's Bluff, Iowa.
Mrs. L. L. Richards, M. D., Tama City, Iowa.
Arthur T. Stillman, Waukon, Iowa.
Frank Slater, Guthrie Center, Iowa.
G. Dayton Webb, McGregor, Iowa.
L. Alvin Young, M. D., Neosho, Mo.
Arthur W. Ziegler, Prairie Du Chien, Wis.

INDIANA DENTAL COLLEGE.

The tenth annual commencement exercises of the Indiana Dental College were held at the Y. M. C. A. Hall, Indianapolis, on Wednesday evening, March 6, 1889. The number of matriculates during the year was fifty-one. Dr. W. L. Heiskell, president of the college, conferred the degree of Doctor of Dental Surgery on the following named (17) gentlemen :

Willard W. Gates, Indianapolis.
M. F. Ault, Kokomo.
Harry W. Cole, Washington.
Waldo E. Callane, Flora.
Peter S. Bower, Indianapolis.
Ward E. Bullard, Burlington.
W. Ellis Wiessell, Fort Wayne.
John C. Walker, Emporia, Kan.
Chas. S. Hardy, Ash Grove, Ont.
Frederick H. Reiss, Shelbyville, Ill.
Bion Moss, Milwaukee, Wis.
Charles K. Raber, Wapaca, Wis.
William Finn, Evansville, Wis.
Sidney W. Curtis, Ravenwood, W. Va.
George B. Martin, Lansing, Mich.
Robert I. Blakeman, Columbia, Ky.
Moses P. Niswonger, Arcanum, Ohio.

UNIVERSITY OF TENNESSEE—DENTAL DEPARTMENT.

The annual commencement exercises were held at the Masonic Theatre, Nashville, Tenn., on Tuesday, February, 26, 1889. The address of the graduates was delivered by Prof. W. E. McCampbell, A. M., M. D. The valedictory address was delivered by Rob't D. Crutcher, of Tennessee. The following named gentlemen received honors : Robert Russell Faculty Medal, A. S. Willis; Faculty Second Honor, T. R. Boger; Faculty Third Honor (Morrison Bros.), W. A. Towns.

Charles W. Dabney, Jr., Ph. D., President of the University, conferred the degree of Doctor of Dental Surgery on the following named (12) persons:

Charles H. Alexander, Tennessee.
Twiggs R. Boger, Georgia.
Arthur J. Cottrell, Tennessee.
Robert D. Crutcher, Tennessee.
Joseph B. Harris, Mississippi.
Eugene L. Holmes, Mississippi.
James H. Moore, Alabama.
Edward E. Slaton, Alabama.
Samuel J. Spargo, Tennessee.
J. C. Spivey, Mississippi.
W. Andrew Towns, Tennessee.
Alvin S. Willis, Tennessee.

The honorary degree of D. D. S. was conferred on W. M. Harris, of Tennessee.

BALTIMORE COLLEGE OF DENTAL SURGERY.

The forty-ninth annual commencement exercises of the Baltimore College of Dental Surgery were held at the Lyceum Theater, Baltimore, Md., on Friday evening, March 15, 1889. The annual oration was delivered by the Rev. J. N. McCormick, and the valedictory address by C. L. Morey, D. D. S. The number of matriculates during the past session was one hundred and eighteen. The degree of Doctor of Dental Surgery was conferred by the Dean of the college, Prof. R. B. Winder, M. D., D. D. S., on the following named (44) gentlemen:

G. E. Adams, New Jersey.
L. P. Brown, New York.
P. C. Carmichael, New York.
J. E. Armitage, New York.
E. E. Butler, Virginia.
G. R. Carter, Virginia.
G. E. Coughlin, Maryland.
Geo. B. Dorsey, Mississippi.
F. C. Exley, Georgia.
W. E. Hanna, Pennsylvania.
A. R. Eaton, New Jersey.
N. L. Hale, Alabama.
J. Hardy, Virginia.
H. L. Harlan, Kentucky.
L. F. Hough, Virginia.
W. D. James, Minnesota.
A. L. Jones, Virginia.
G. W. S. Ireland, Maryland.
B. B. Johnston, District of Columbia.
W. C. Klatte, South Carolina.
A. Kraus, Roumania.
N. B. Larkin, Tennessee.
J. H. Minard, Ontario.
C. L. Morey, Texas.
W. H. Lockwood, Wisconsin.
F. H. Moore. Maine.
E. E. Murray, North Carolina.
J. F. McArthur, Dakota.
T. S. McElfish, Maryland.
O. M. Nisley, Maryland.
E. G. Powers, Minnesota.
J. P. Nesbitt, Ohio.
J. N. Penberthy, Minnesota.
J. G. Robinson, Jr., Maryland.
F. Rothenbach, Germany.
G. B. Rush, Virginia.
H. L. Sumption, Virginia.
J. R. Watson, Pennsylvania.
J. P. Whedbee, Virginia.
W. E. Walker, Mississippi.
W. R. Spencer, Virginia.
D. Williams, North Carolina.
C. Whitney, District of Columbia.
A. E. Whitehead, Virginia.

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

The number of students in attendance at the session of 1888-9, was: Seniors 20, juniors 30. The following named (18) students received the diploma of the college, conferring the title of L. D. S.:

N. W. Cleary, Renfrew.
E. Cunningham, Coelnywood.
E. H. Eidt, Berlin.
C. C. Ferguson, London.
A. Hugh Hipple, Campden.
J. T. Ireland, Seeforth.
J. J. Kerr, Campbelford.
H. P. Martin, Toronto.
G. P. Matthewman, Ottawa.
Geo. McDonald, Aruprior.
R. G. McLaughlin, Brampton.
C. S. McLean, Brockville.
I. W. Oakley, Toronto.
C. A. Risk, Aberfeldy.
Andrew Rose, Pictou.
Allan J. Smith, Prescott.
I. H. Swann, Toronto.
A. F. Webster, D. D. S., Toronto.

All of the Province of Ontario.

HOWARD UNIVERSITY.—DENTAL DEPARTMENT.

The third annual commencement exercises of this institution were held at the Congregational Church, Washington, D. C., on Saturday evening, March 16, 1889. The degree of Doctor of Dental Surgery was conferred on the following named (6) gentlemen:

Murdoch S. Campbell.
John W. Cary.
J. Melvin Lamb.
Charles A. Neal.
Augustus C. Schwartz.
Hamilton Smith.

PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

The thirty-third annual commencement exercises of the Pennsylvania College of Dental Surgery were held at the American Academy of Music, Philadelphia, Pa., on Friday evening, March 1, 1889.

The number of matriculates during the past session was one hundred and seventy-eight. The address to the graduates was delivered by Prof. Henry Leffmann, M. D., D. D. S. The degree of Doctor of Dental Surgery was conferred by the President of the College, S. W. Gross, M. D., on the following named (91) persons:

Ambrose M. Allen, Pennsylvania.
Ismael Angulo, South America.
Clarence E. Bachman, Minnesota.
William C. Bailey, New York.
Alois Binotsch, Germany.
Scipio Bond, Minnesota.
C. Walter Borgner, Pennsylvania.
Frederick R. Brunet, Cuba.
Ramon Campuzano, Cuba.
Julia May Carmen, New York.
George W. Chamberlain New Jersey.
George M. Clark, New York.
Arthur Perry Clarke, New York.
Edward Moberg Cooper, Pennsylvania.
Wm. M. G. Corrie, Ph. G., Penn.
Edgar E. Culbert, L. D. S., Canada.
E. C. Dean, Canada.
James L. Diven, Jr., Pennsylvania.
J. Adams Dyer, Canada.
R. W. Edwards, New Jersey.
Leon A. Effron, Russia.
Milton Randolph Fisher, Louisiana,
Gertrude M. Flies, New York.
Lynn J. Gale, New York.
Clarke M. George, Ohio.
Frederick Thomas Gibson, Canada.
Albert H. Goodrich, Minnesota.
George N. Griswold, New York.
William E. Grover, Pennsylvania.
G. A. Guile, New York.
Wm. P. Gummer, California.
Zelopheard Hand, New Jersey.
Arthur H. Hanington, Canada.
Edgar Harding, Pennsylvania.
F. Kramer Heazelton, New Jersey.
Henry C. Heyer, Illinois.
Elmer Ellsworth Hill, Massachusetts.
Fannie E. Hoopes, Maryland.
James Homer Hope, Pennsylvania.
Freed A. Hoyt, Minnesota.
W. Edwin Jackson, Pennsylvania.
E. M. Johnson, Minnesota.
O. Herschel Johnson, Pennsylvania.
Abner Jones, Ohio.
David Griffith Jones, New York.
Harry Davis Jones, Ohio.
N. H. Keyser, Pennsylvania.
Harvey Chambers King, Pennsylvania.
John R. Lane, Pennsylvania.
Chauncey Griffith Lewis, Ohio.
Elmer Clinton Lockard, New Jersey.
J. Dayton Lowrey, Pennsylvania.
Ernestine A. Mergler, Illinois.
John V. Mershon, Pennsylvania.
George Edwin Messick, Delaware.
W. M. Molyneaux, Pennsylvania.
Julio Moncada, South America.
Robert Ernest Morrison, Kentucky.
Alex. Fergus McBurney, Pennsylvania.
Thomas McCullough, Canada.
Kenneth McDougall, Pennsylvania.
Bert. V. Needham, New York.
Frank Culver Pague, California.
Wilbur L. Pepper, Pennsylvania.
Robert S. Ramsey, Canada.
John J. Reardon, New York.
Albin C. Rosenquist, Minnesota.
David A. Rosenthal, Russia.
Const'ino Eudoro Salcedo, So. America.
Ignacio H. Santamaria, South America.
Fried Schlapp, M. C. D., Germany.
C. Calvin G. Schomo, Pennsylvania.
Martha Schroeder, Germany.
John H Shaw, Pennsylvania.
Matthew A. Smith, New Jersey.
William H. Snyder, Pennsylvania.
Richard S. Starkey, Canada.
F. Albert Stanger, New Jersey.
John C. Stites, Delaware.
William Lincoln Straw, Pennsylvania.
Tomosabro C. Suganuma, Japan.
William Rutherford Sutch, Penn.
Edward C. Truesdell, Minnesota.
Albert B. Van Osten, West Virginia.
Monroe L. Vansant, M. D., Penn.
D. Porter Vincent, Pennsylvania.
Heinrich Volkmer, Germany.
W. W. Walker, Minnesota.
Geo. C. Watson, Pennsylvania.
Irvin Norris Wells, Georgia.
Frank R. Zahniser, Pennsylvania.

OHIO COLLEGE OF DENTAL SURGERY.

The forty-third annual commencement exercises of the Ohio College of Dental Surgery, Department of Dentistry of the University of Cincinnati, were held on Monday, March 4, 1889.

The Address on part of the faculty was delivered by C. R. Taft, D. D. S., Vice-President of the Board of Trustees. The Prizes were awarded by Prof. H. A. Smith, Dean of the Faculty; an address by E. D. Warfield, Esq.; and the Class Oration, by H. M. Patton.

The number of matriculates during the past session was one hundred and fifty. The degree of Doctor of Dental Surgery was conferred by the Vice-President of the Board of Trustees, C. R. Taft, D. D. S., on the following named (65) persons:

Frank Archer Ayer, Ohio.
David William Barrow, Ohio.
Oscar L. Beard, Ohio.
Harry Clifton Blethrow, Pennsylvania.
Phares S. Bollinger, Ohio.
William Tecumseh Born, Ohio.
Ralph Rariden Braxtan, Indiana.
James Theodore Bristow, Michigan.
Asbury Ross Bryte, Pennsylvania.
Alva Matthews Bush, Ohio.
Clare Otis Carr, Ohio.
Frank L. Cary, Ohio.
Ben Carter Chandler, Kentucky.
William H. Cole, Ohio.
Guss B. Cooper, Kentucky.
Alamander Noble Copsey, California.
Charlie Henry Crigler, Kentucky.
Jos. Mitchell Cunningham, New York.
William Wesley Dickey, Mississippi.
Felix William Doran, Iowa.
Benjamin Franklin Erb, Iowa.
George W. Gandee, Ohio.
William Henry Gillette, Ohio.
Robert Lee Gray, Ohio.
Charles Henry Griffin, Ohio.
Melville McHenry Haas, Indiana.
Horace Edwin Hatton, Ohio.
Robert Hervey Hodgen, Kentucky.
Aurdy Julian Holmes, Ohio.
Theophilus Frame Hover, Penn.
William Oliver Hulick, Ohio.
Thomas Owen Humphreys, Kentucky.
Harry Jenkins, Ohio.
Nathan Kelly, Illinois.
Edwin Franklin Keran, Minnesota.
Josiah R. King, Pennsylvania.
Will Clarence Lupfer, Ohio.
Herbert L. Madison, Iowa.
George Erwin Mann, Ohio.
Edwin Clark Maxwell, Michigan.
William Thomas McLean, Canada.
Mrs. Lucy D. Montz, Kentucky.
Edwin H. Moss, Missouri.
Harry Mathiot Patton, Ohio.
Fred B. Pittwood, Illinois.
Eber Reynolds, Ohio.
Christopher Columbus Ritter, Indiana.
Carl Ritz, Ohio.
James Edgar Rothenbush, Ohio.
William Henry Sedgwick, Jr., Ohio.
Horatio Clay Sexton, Indiana.
Edward Grant Snodgrass, Ohio.
Elmer S. Snyder, Iowa.
Jerome Walter Sparks, Indiana.
Andrew Levett Sprague, Ohio.
Daniel Herndon Sullivan, Ohio.
Frank Berry Taylor, Kentucky.
Richard Taft Taylor, Ohio.
Horace Melville Thomson, Kentucky.
Warren H. Upton, Iowa.
Lewis Worthington Watts, Ohio.
Arthur Jewell Weaver, Ohio.
Waitman Albert Williams, Ohio.
Walter Theophil Withofft, Ohio.
George Barkley Wortman, Ohio.

COLUMBIAN UNIVERSITY—DENTAL DEPARTMENT.

The second annual commencement exercises of the Dental Department of the Columbian University were held in conjunction with those of the Medical Department at Albaugh's Opera House, Washington, D. C., on Thursday, March 21st, 1889. The address on behalf of the faculty was delivered by Prof. Henry C. Thompson, D. D. S. The degree of Doctor of Dental Surgery was conferred by the president of the University, on the following named (3) persons:

John K. Halley, District of Columbia.
Edith Jewell, Virginia.
Charles B. Munson, Virginia.

PHILADELPHIA DENTAL COLLEGE.

The twenty-sixth annual commencement exercises of the Philadelphia Dental College were held at the Academy of Music, Philadelphia, Pa., on Thursday evening, February 28, 1889. The address to the graduates was delivered by Prof. S. B. Howell, M.D., D.D.S., and the valedictory by James G. Whiting, D.D.S. The number of matriculates during the session just closed was two hundred and twenty-six. The degree of Doctor of Dental Surgery was conferred on the following named (98) persons :

Carlos Agnese, Brazil.
Aguilar y Rodriguez, Ph.B., Florestan, Spain.
Mary M. Apgar, District of Columbia.
Hester J. Baker, Illinois.
W. Egbert Barnes, Italy.
George W. Bates, Maine.
William W. Belcher, New York.
George R. Bell, Pennsylvania.
Percy Bennett, Australia.
Harry W. Bertholf, New Jersey.
Horace Betts, Delaware.
John H. Botz, Canada.
Peter C Boulo, Alabama.
Camille Bourgeois, Louisiana.
Demosthenes Brush, New York.
Rubens S. Bustos, Chili.
Fred J. Capon, L.D.S., M.D.S., Can.
George R. Churchill, Pennsylvania.
William A. Clymer, Minnesota.
Joseph P. Collins, Canada.
J. Charles Combe, Rhode Island.
F. Emanuel Doering, Canada.
Joseph E. Duffield, New Jersey.
George E. Ellerbeck, Utah.
Harold B. Findley, Canada.
Andrew J. Flanagan, Massachusetts.
Annie T. Focht, Pennsylvania.
Frederick M. Fulkerson, Missouri.
Jesse P. Garvin, Wisconsin.
Fred W. Gibson, California.
John W. Gibson, M.D., California.
Marinda B. Gifford, Massachusetts.
Thomas C. Gledhill, England.
Harry A. Glover, Indiana.
John W. Glover, Pennsylvania.
Arthur Y. Greene, Massachusetts.
A. DeWitt Gritman, New York.
Frederick L. Hamm, Ohio.
James N. Harris, Canada.
Frank A. Hatch, Massachusetts.
Charles Q. Hillegass, Pennsylvania.
William M. Hodsdon, Massachusetts.
Joseph L. Holberg, Mississippi.
W. J. Hunt, Massachusetts.
Henry A. Ickes, Pennsylvania.
Alice I. Ireland, New York.
J. William Jaco, Pennsylvania.
Benn C. Jewett, New York.
Albert B. Johnson, Connecticut.
Harvey C. Johnson, Pennsylvania.
G. Cleland Jones, Delaware.
James W. Joslyn, New Jersey.
Albert Kath, Germany.
Eugene L. Keen, Pennsylvania.
J. Edward Kelley, Ohio.
Arthur H. Kunze, Germany.
Anna K. Lettenmeier, Pennsylvania.
George R. Martin, Canada.
William R. Mills, New York.
Leslie D. Mitchell, New Jersey.
Richard D McCaskey, Pennsylvania.
Herbert V. McCormick, New Jersey.
Edgar W. McFarland, Missouri.
A. Frederick Olmstead, New York.
John D. Powell, California.
Charles R. Pullen, Canada.
George I. Robb, Canada.
William S. Rosenthal, Pennsylvania.
D. B. Saxton, "
Richard Schmidt, "
H. Hugo Schurig, Germany.
Cyrus U. Smith, Kansas.
S. C. Snyder, Illinois.
William A. Spring, Vermont.
Charles H. Stadlinger, New Jersey.
William S. Storer, New York.
Edward S. Talbot, Maine.
Charles B. Tiley, Connecticut.
Fred R. Thompson, New York.
W. Irving Thompson, Kentucky,
Henry R. Thornton, Canada,
William F. Tremain, New York,
Dalton Trumbauer, Pennsylvania.
T. T. Tunstall, Alabama.
Charles H. Turley, Pennsylvania.
Charles M. Vanderslice, Pennsylvania.
Charles W. Varcoe, New York.
David P. Ver Valen, Brazil.
A. T. Watson, Canada.
David H. Waugh, Canada.
B. Gifford Weber, Pennsylvania.
Harry W. Wellman, Missouri.
Albert C. White, Jr., Rhode Island.
James G. Whiting, Illinois.
Walter E. Willmott, L.D.S., Canada.
J. Alexander Williams. "
Dan. M. Wood, Indiana.
Eliza Yerkes, Pennsylvania.

UNIVERSITY OF MARYLAND—DEPARTMENT OF DENTAL SURGERY.

The seventh annual commencement exercises of the department of Dental Surgery of the University of Maryland were held on Wednesday, March 13, 1889, at the Lyceum Theater in Baltimore, Md. The address on behalf of the Faculty was delivered by Dr. J. B. Patrick, of Charleston, S. C., and the class oration by Dr. Hampton K. Smith, of South Carolina. The number of matriculates during the past session was one hundred and twenty. On delivering the degree of Doctor of Dental Surgery to the graduates, they received the following charge from the Hon. S. Teackle Wallis, LL.D., Provost of the University:

"You receive these diplomas, gentlemen, under the charter of the University, as 'honorable and perpetual testimonials'; upon condition, only, that so long as you exercise the privileges which they confer, you will diligently and faithfully discharge the duties of your calling; that you will abstain from irregular and unprofessional practices of every sort, and will bear yourselves toward society and your brethren, with charity and honor. Will you pledge yourselves so to do?"

All students who graduate from the Dental Department of the University of Maryland publicly promise to observe the above charge. This has been done ever since the department was organized.

Thereupon the diplomas were delivered to the following named (39) persons:

Charles G. Aven, Virginia.
Augustine Pennington Badger, Md.
Eugene James Bailey, South Carolina.
Victor Durand Barbot, "
Joseph Percy Blair, Virginia.
Frank Beck, Pennsylvania.
Kelly Ragland Bragg, Missouri.
H. Wood Campbell, Virginia.
Thomas S. D. Covington, Jr., Virginia.
August Adolph Theodor Wilhelm Cuny, Germany.
E. Douglas Davis, West Virginia.
Henry Davis, M.D., Missouri.
Edwin R. Dodson, M.D., Maryland.
Pearl Louis Ellis, Vermont.
William Lafayette Fish, New Jersey.
Harry Augustus Free, Pennsylvania.
David Goebricher, Maryland.
Joseph A. Haas, New York.
E. Patterson Hayes, Pennsylvania.
Joseph Gregory Henisler, Maryland.
Reuben Benjamin Hills, Massachusetts.
Wm. Henry Holland, South Carolina.
John W. McKinnon, Pennsylvania.
William Lee Miller, West Virginia.
J. England Molony, South Carolina.
Solomon L. Nigolosian, Asia Minor.
Frank M. Oldham, South Carolina.
Czeslaus Opielinski, Germany.
George B. Patterson, North Carolina.
Frank Zea Pirkey, California.
Benson S. Roberts, Bermuda.
Fritz F. W. Schloendorn, Germany,
Joseph B. Sharp, New Jersey.
Archie C. Shoemaker, Pennsylvania.
Benjamin Simons, South Carolina.
Hampton K. Smith, "
Cornel. van der Hoeven, M.D., Holland.
William J. Warnock, South Carolina.
Murray V. Wright, M.D., N. Hampshire

KANSAS CITY DENTAL COLLEGE.

The eighth annual commencement exercises of the Kansas City Dental College were held at Music Hall, Broadway, Kansas City, Mo., on Monday evening, March 11, 1889. The number of matriculates was thirty. The address on behalf of the Faculty was delivered by C. B. Hewett, D.D.S. The degree of Doctor of Dental Surgery was conferred by the President of the College, E. W. Schauffler, on the following named (11) gentlemen:

Rice R. Buchanan, Dakota.
Ben H. Dickson, Kansas.
Horace J. Hughs, Kansas.
Charles V. Larmer, Missouri.
Ross T. Thomas, Missouri.
Fritz Baum, Prussia.
Jefferson D. Hannah, Missouri.
Newton W. Hiatt, Indiana.
Arthur E. McKellar, Kansas.
Frank L. Warren, Kansas.
Samuel C. Wheat, Missouri.

MEHARRY SCHOOL OF DENTISTRY.

The third annual commencement exercises of the School of Dentistry of the Meharry Medical Department of Central Tennesee College were held in connection with that of the Medical Department at Masonic Theater, Nashville, Tenn., February 21, 1889.

The Dental Valedictory was delivered by J. R. Porter, of Yazoo City, Miss. The subject of his discourse was "Necrosis and Exfoliation of the Alveolar Processes."

R. F. Boyd, M. D., D. D. S., delivered the faculty address to the dental graduates.

President Braden then conferred the degree of Doctor of Dental Surgery on the following named (6) persons:

T. A. Curtis, Marion, Ala.
D. W. Fields, Mason, Tenn.
S. M. Hickman, Temperance Hall, Tenn.
J. B. Maclin, M. D. Shreveport, La.
J. R. Porter, A B. Yazoo City, Miss.
A. M. White, Nashville, Tenn.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS—DENTAL DEPARTMENT.

The second annual commencement exercises of this institution were held on Friday evening, March 8. 1889, at Memorial Hall, St. Louis, Mo. The number of matriculates during the past session was fourteen

Prof. A. G. Finney, D. D. S., was presented with a silver water service by the class. Prof. W. Y. Lange a gold-headed cane by the class. The following named prizes were awarded:

For the best general examination, a gold medal to Mr. Thomas F. Harrington, of St. Louis.

A nickle-plated dental lathe for the best gold plate work to Fred. B. Chase, of St. Louis.

The S. S. White prize for the best gold filling, a set of Varney Pluggers to Morris Israel, of St. Louis.

The degree of Doctor of Dental Surgery was conferred on the following named (6) gentlemen:

Thomas N. Perrine.
T. F. Harrington.
Morris Israel.
George O. King.
Hanford Thayer.
F. B. Chase.

AMERICAN COLLEGE OF DENTAL SURGERY.

The Third Annual Commencement Exercises of the American College of Dental Surgery were held at the Madison Street Theater, Chicago, on Monday, March 25, 1889. The degree of Doctor of Dental Surgery was conferred on the following named twenty (20) persons:

H. R. Boulter.
Fred J. Burr.
S. T. Burke.
William H. Dodge.
C. Fred Fitch.
Frank J. Gallagher.
Arthur S. Glines.
John A. Gwynne.
J. C. Jones.
William B. Jones.
Rebecca H. McIntosh.
George W. McNulty.
Louisa Moeller.
William H Prettie.
William L. Stevens.
Charles S. Terry.
Louis P. Wagner.
C. W. Watterson.
J. A. Whipple.
Henry C. Young.

NEW YORK COLLEGE OF DENTISTRY.

The twenty-third annual commencement exercises of the New York College of Dentistry were held at Chickering Hall, New York City, on Monday evening, March 11, 1889. The address to the class was delivered by the Rev. Henry Y. Satterlee, D. D.; the class valedictory was delivered by John Charles Oberle, D. D. S. The degree of Doctor of Dental Surgery was conferred by William T. La Roche, D. D. S., Vice-President of the Board of Trustees, on the following named (70) gentlemen:

Arthur Beaumont.
William Abraham Berendshon.
Albert Bandmann.
Walter Haviland Bedell.
Victor Charles Bell.
Henry Napoleon Berthiaume.
Frank Williard Bridges.
William Noble Rush, Jr.
Isaac Walter Claypoole.
Edwin Cudlipp.
Alfred D'Orville Doty.
John William Davy
John Marion Edmunds.
Stacy Rufus Everett.
Ralph Waldo Emerson.
Howard Henry Fox.
Eurique Rafael Gonzalez.
Rudolph Heinrich Egon Gudewill.
James Granville Gallagher.
Henry Clifford Green.
Frank Gilbert Gregory.
Samuel Hess.
Robert George Hutchinson, Jr.
Henry Heath, Jr.
Syrus Augustus Jordan, Jr.
Wilhelm Kull.
Michael Leo.
Moritz Henry Lewkowicz.
Edward Francis Lanchantin.
William Samuel Loomis.
George Mac Nally.
Edward Isaac Mead.
Pablo Reynaldo Moreno.
Ludwig Martin Meyer.
William Henry Moon.
Michael Moskovich.
William Sullivan May.
Norman Shakespeare Morgan.
George Eugene McKirgan.
Henry Frederick Maasch.
John Brown Merritt.
Ira Leonard Nickerson.
John Charles Oberle.
Edward Owens.
Henry Porter Osborn.
Frank Robinson Parsons.
Edward Huntley Pease.
George Edgar Pool.
Alfred William Repelovski.
Juan Antonio Riano.
William Elijah Rice.
Edwin Somerville Robinson.
Alfred Drew Seaver.
Abraham Lincoln Sterne.
Max Sterne.
Frederick Richard Smith.
Abraham Lincoln Smyth.
Raphael Stork.
Primus Chadwick Smith.
Clarence Warren Steele.
Edward Herbert Sears.
Edward Herbert Werner.
Sigmund Wintner.
Robert Moseley Wollison.
Heinrich Christian Louis Weber.
William Hildreth Webber.
George Edwin Trip Ward.
Charles Stafford Willson.
Edward Waugh.
George Elliott Wilcox.

SOUTHERN MEDICAL COLLEGE—DENTAL DEPARTMENT.

The second annual commencement exercises of the dental department of the Southern Medical College were held at De Give's Opera House, Atlanta, Georgia, March 2, 1889. The Rev. Dr. Walker, of Georgia, delivered the faculty address. Dr. L. D. Carpenter, Dean of the college, presented the following gold medals on behalf of the faculty:

First honor, Faculty Medal, M. Y. Crist. Carpenter Medal, Pathology and Therapeutics, H. J. Garland. Wm. Crenshaw Gold Medal, Operative and Clinical Dentistry, W. T. Sinclair. Henley Medal, Oral Surgery and Materia Medica, B. R. McBath. Thompson Medal, Crown and Bridge work, Aaron

Branch. Holland Medal, Chemistry and Metallurgy, J. A. Link. Nicolson Medal, Anatomy, J. A. Link. Word Medal, Physiology, W. T. Sinclair. Special, Holliday Bros., Best Junior examination, Gold Medal, E. G. Thomas. Special, Gold Medal, Thomas Crenshaw, Demonstrator, Best Gold Filling, J. W. Daniel. Dr. T. S. Powell, President of the Board of Trustees, conferred the degree of Doctor of Dental Surgery upon the following named (17) gentlemen:

J. A. Arbeely, M. D., Damascus, Syria.
Aaron, Branch, Georgia.
J. W. Daniel, Louisana.
J. W. Duke, Georgia.
H. J. Garland, Georgia.
R. L. Lane, Alabama.
J. A. Link, Georgia.
T. B. Pilcher, Georgia.
R. G. Ragan, Alabama.
M. Y. Crist, Kentucky, First Honor.
O. H. Cantrell, Georgia.
C. W. Forehand, Georgia.
T. M. Hyman, Georgia.
S. W. Lide, Georgia.
B. R. McBath, Tennessee, Valedictorian
W. T. Sinclair, North Carolina.
H. B. Williamson, Alabama.

MISSOURI DENTAL COLLEGE.

The twenty-third annual commencement exercises of the Missouri Dental College of St. Louis were held at Memorial Hall on the evening of March 14, 1889.

The Honorary Degree was conferred upon Charles Rudolph Edward Koch, of Chicago, Ill.

Prizes were awarded by Professor W. H. Eames, as follows:

The St. Louis Dental Society prize, a gold medal, to Adrien Zinsstag, D. D. S.

The S. S. White Dental Manufacturing Co.'s prize, a set of Varney Pluggers, to John Thomas Fry, D. D. S.

The St. Louis Dental Manufacturing Co.'s prize, a Dental Lathe, to Henry Ruutz, D. D. S.

Professor Henry H. Mudd, Dean, conferred the degree of Doctor of Dental Surgery upon the following named (18) gentlemen:

Henry Allen Bragg, Jefferson City, Mo.
Jonathan Otis Eppright, Centerview, Mo.
John Thomas Fry, Moberly, Mo.
Charles Leroy Hickman, St. Louis, Mo.
Philip Frank Hellmuth, Highland Ill.
Wm. Worwick Holmes, Mt. Carmi, Ill.
Harry Taylor Hyams, Port Allen, La.
Gilbert Wesley Jarvis, Moberly, Mo.
De Courcey Bradley Lindsley, St. Louis, Mo.
Eugene Beauharnais Neal, Bethany, Mo
Alex. Stark Oliver, Butte City, Montana.
Geo. Harry Pipino, M. D., Quincy, Ill.
Julius Peter Ruge, M.D., St. Louis, Mo.
Henry Ruutz, Basel, Switzerland.
Edward August Ferdinand Wulze, St. Louis, Mo.
Frederick Edward Weber, Basel, Switzerland.
Joseph Henry Wilson, Hannibal, Mo.
Adrien Zinsstag, Basel, Switzerland.

CHICAGO COLLEGE OF DENTAL SURGERY.

The seventh annual commencement exercises of the Chicago College of Dental Surgery were held at the Grand Opera House, Chicago, on Tuesday afternoon, March 26, 1889. The faculty address was delivered by Prof. Geo. H. Cushing, M. D., D. D. S. An address to the graduates was also delivered by the Rev. T. G. Milsted and the valedictory address was delivered by B. F. Eshelman, D. D. S. The number of matriculates during the past session was one hundred and sixty-one. Prof. T. W. Brophy, M. D., D. D. S., President of the Board of

Trustees, conferred the degree of Doctor of Dental Surgery on the following named (64) gentlemen:

William Seward Aldrich, Minnesota.
Heber Bingham Barber, Illinois.
Harvey Herbert Bates, Illinois.
Hal Clair Billig, Wisconsin.
George Ernest Brownlee, Illinois.
William Graham Campbell, M. B., C. M., Scotland.
Arthur Erwin Capener, Wisconsin.
Frank Eugene Cheeseman, Illinois.
James Agnew Cochran, Illinois.
William Henry Caldwell Cowen, Kansas.
James Albert Curry, Illinois.
Nelson Denique Edmonds, Indiana.
Frank Stanley Eiles, Illinois.
Follen Peabody Ellis, Wisconsin.
Benjamin Franklin Eshelman, Iowa.
Edward James Farrell, Illinois.
Vincent Fischer, Illinois.
Frank F. Fletcher, Colorado.
Edward J. Flynn, Colorado.
Horace Eugene Fox, Michigan.
Enoch Morse Fredericks, Illinois.
Clarence Albert Gleason, Wisconsin.
William Preston Gorsline, Wisconsin.
Arthur Grant Harrison, Illinois.
Charles Wesley Harter, Iowa.
Charles Cole Henry, Illinois.
Will Ellsworth Hoffman, Illinois.
Frank Milton Johnson, Illinois.
Emil John Kautsky, Wisconsin.
Horace Greeley Logan, Minnesota.
William Fletcher McCawley, Illinois.
Frank Tyler McConnell, Wisconsin.
Frederick Burdette Merrill, New York.
Lewis Albert Meyer, Wisconsin.
Frederick E. Morris, Illinois.
Ralph Waldo Morse, Indiana.
William Henry Mueller, Wisconsin.
Byron Alonzo Nelles, Michigan.
Alfred John Oakey, Wisconsin.
George Howard O'Brien, Illinois.
William Judson Phillips, Illinois.
Roscoe Robert Powell, Wisconsin.
Frank J. Raymond, Illinois.
Anderson Franklin Reed, M. D., Colorado.
Alex McLeod Rivenburg, Illinois.
Edward Guilbert Robinson, Iowa.
Andrew William Rogers, Illinois.
David William Runkle, Wisconsin.
Henry Read Sackett, Colorado.
Herbert Haynes Silliman, Illinois.
Henry Patrick Smith, New York.
John Wesley Smith, Illinois.
Eli Slifer Straub, Michigan.
Joseph Atwood Swasey, Illinois.
Fred Strong Tabor, M. D., Illinois.
David Taylor, Jr., Wisconsin.
Irwin Francis Upson, New York.
Charles Edward Vernay, Illinois.
Electus Backus Ward, M. D., Illinois.
Thomas Martin Welch, Wisconsin.
Justus Allen White, Michigan.
Simon Willard, M. D., Illinois.
Frank Vincent Woodward, Kansas.
Clarence Huntington Wright, Illinois.

Honorary, James Atwood Swasey, Illinois.

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"REGULATING A PULPLESS TOOTH."

[Reply to D. in January No. of the REVIEW.]

If the tooth in question has a dead pulp, or the remains thereof, it should be opened and the debris removed antiseptically. The canal should then be packed with cotton, saturated with an essential oil or combination of oils, and left for several days. It should then be filled to the apex with gutta percha, but no material should be forced through. After a few days, or preferably weeks, if there be no urgency as to time, the tooth may be moved for regulating, bu extra care should be used and more time given than if the pulp were alive. G. N

PRACTICAL NOTES.

DR. MARTINDALE'S CLOSING REMARKS ON HIS PAPER READ AT THE ANNIVERSARY MEETING, FEBRUARY, 1889.

In referring to the commendatory remarks and just criticisms uttered by the gentlemen who have discussed my paper, I would say, in answer to Dr. Atkinson's allusion to the fact, that I had permitted the opinion to gain weight from my essay, that repair of tissue results by inflammatory processes, whereas he (Dr. Atkinson) maintains that it results instead by an organization into new tissue of embryonic cells, which embryonic cells are the result of retrograde metamorposis, or melting down of the original tissue.

Now, in the body of my paper, I stated that with the intricate "mass of fact and fiction which at present alone constitute our knowledge of inflammation I should not treat." However, I wish to say that I am perfectly familiar with the tenets of the school of Stricker on that subject. I know also that cells of a character similar to, if not identical with embryonic cells, are found in suppurating wounds. But I am not prepared to admit it as *proven* that repair of tissue is effected by a retrograde dissolution into embryonic cells, whence by organization as in fœtal life restoration is effected.

With respect to the use of sponge-graft, in cases such as I have narrated, I would say that I have carefully tried it, in the way, too, that Dr. Atkinson has suggested (with a cover or matrix to protect and give shape to the proliferation of repair cells), but despite every attention to minute details, both of antisepsis and manipulation, my efforts in the two cases in which I tried it soon became the seat of the most disgusting fetor, and the last state of those patients was verily worse than the first. I have seen numerous successful cases of sponge-graft in other parts of the body, but I think the mouth, with its fluid contents, temperature, uses, and environment, most unsuited for this operation, especially for slight recession or solution of gum-tissues.

In regard to my reason for abandoning the use of the dental engine in the removing and scraping away of dead bone, I would simply say in answer to Dr. Brophy that I think in removing honeycombed bone I can trace my way better by the sense of touch, and am less liable to jump and mangle my work ; although in certain cases (especially the excising of jagged or dead roots of teeth), I use the engine still. Dr. Brophy and myself agree so well I know upon our theory and treatment of maxillary necrosis, and caries, that a slight difference in the instruments we select for effecting our purpose will, I imagine, matter little as to results.

In concluding my remarks I crave permission, although possibly not strictly in order, to a device which in the retention of very loose teeth in the removal and treatment of necrosed or carious bone around their roots, I have found very serviceable. The device referred to is a part of the admirable and original application of mechanical principles for the regulation of teeth. It is essentially the method indicated by him as his method for the *retention* of teeth *after* they have been regulated by bands with tubes cemented to the teeth and connected to each other by a wire. I can not, unfortunately, take the time now, nor do I think that if I had the time, could I satisfactorily describe it. I greatly regret that Dr. Angle is not down here as was expected, in which case he could demonstrate the device in question. I have represented it by the chart which I show, and it was also illustrated in the *Medical Record* of October 6, 1888; it being in that article recommended as a splint for the treatment of fractured maxillæ, for which purpose Dr. Angle commends it. I thank you, gentlemen, for your patient attention at so late an hour.

CLEFT PALATE CLINIC.

At the Clinic of the Twenty-Fifth Anniversary of the Chicago Dental Society, Dr. Calvin S. Case, of Jackson, Michigan, demonstrated his method of making artificial vela for congenital cleft palate. The case operated upon was a man æt. about 30, with a cleft extending through the soft and the posterior two-thirds of the hard palate.

In taking the impression, which seemed to be not more difficult than taking an ordinary impression for a partial denture—he endeavored to enforce the fact that absolute perfection was material only along the border of the cleft in the hard palate, and over that portion of surface in the roof of the mouth that is to be covered by the lateral wings of the anterior portion of the artificial palate. From this he made a mold in plaster and formed the model of the palate in modeling composition, producing the form of the "veil" by repeatedly trying in the mouth. Then by the aid of a specially formed flask he surrounded it with parts in plaster which were subsequently duplicated in Babbit-metal. The latter were not more difficult to make than an ordinary die and counter for a metal plate.

In polishing the casts preparatory to vulcanizing the artificial palate, he showed how the first palate may be produced with a thin and abridged veil so as to be less irritating to the naturally sensitive tissues, and how subsequent ones could be easily thickened and extended, as the case required, and also in case the palate is found to be imperfect in its proportions, how it can be readily corrected by scraping or renewing the casts.

After the palate was vulcanized he took the impression for the sustaining plate, leaving this to be finished at the college.

During the clinic the doctor presented two patients—residents of this city, both wearing artificial vela made by him; and all who saw these cases pronounced them perfect in every particular. One had been worn about six months, and showed a marked improvement in vocal articulation; the other was finished the day before the clinic, having been made at the Chicago College of Dental Surgery, for the benefit of the students.

While at the college, he took impressions of two other cases—one of which he got ready for the final casts in Babbit-metal—leaving both to be completed by the students.

MANAGEMENT OF COPPER AMALGAM.

BY DR. GARRETT NEWKIRK.

First: The ordinary small glass mortar supplied by the Dental Depots is absolutely worthless. One needs a "wedge-wood" mortar at least 2½ inches wide within, and a short pestle.

At first such a mortar will seem rough, and waste material by adhesion, but the surface will improve by use.

Second: The mortar and pestle should be warmed before using. If convenient they should be kept in a warm place, and always ready.

Much of the unsatisfactory working of copper amalgam comes from ignorance, or neglect of this one item. The amalgam is heated over a flame till the mercury oozes, and then suddenly chilled by being cast into a cold mortar. Then, unless it is rewarmed by long continued and vigorous rubbing, it does not recover its working properties.

That warmth is essential, prove as follows: Take a mass in the palm that appears to be crumbly and non-cohesive—a mass that seems to lack mercury. Rub it vigorously in the old-fashioned way with the finger. As the amalgam grows warm it becomes plastic, rolls out like soft putty, the mercury glistens, and is easily squeezed out in a bit of muslin. Still the mass remains plastic so long as it is kept quite warm.

Third: It should not be placed on a cold slab when ready for use. A convenient thing for this purpose may be made of any small wooden box lid, or porcelain jar lid—say 1½ inches wide, and fitting into this a piece of mica. This box also should be kept in a warm place, or warmed on occasion of use.

When copper amalgam fails to work, apparently on account of dryness, it should not be made plastic by mercury, but by reworking—friction and warmth. It will invariably be found to contain more than enough mercury.

By pursuing this plan, and *not* heating to excess at first, I have found that a filling inserted at the first of a sitting, would often be hard enough to finish at the close—say an hour later.

If the material is not left in excess, but shaped down, a decided improvement in color is often obtainable by repeated pressings of tin foil on the surface. Of course, if much grinding is done afterward the benefit is lost.

Some one in the Illinois State Society meeting said this made the filling pit, but this has not been my experience.

AN ORIGINAL METHOD OF MAKING DIES FOR CROWNS, AND ALSO OF INVESTING A PORCELAIN CROWN FOR SOLDERING.

Dr. C. D. Snow, of Minneapolis, sends us the following:

In making gold crowns of plaster models of teeth, in the old way, that is, making the die out of the harder metal, and counter out of the softer, you will find the crown is much larger than the plaster model, but if you will reverse the metals, making the die out of the solder, you will find the crown to be about the same size. In making the die you can use pure lead, and run Haskell's Babbit metal over it for the counter.

I have also found a quick and good way for investing teeth and crowns for soldering is to take a piece of asbestos paper, wetting it in water and wrapping it around the tooth or crown to be soldered, and holding it in place with a piece of fine binding wire. I then turn the blaze on to the whole thing until it is dry. After that I find no trouble in soldering. Sometimes I oil the tooth before putting the paper around it. This way saves time, and is much cleaner. It occurred to me by seeing a jeweler solder set rings with only common wet tissue paper around the setting.

I have used the above for over a year, and don't find any trouble with teeth cracking. It is good to use when you fuse a gold band to a crown with jewelers' enamel.

MEMORANDA.

Cotton hairs, fibres, or floss. Which?

M. Paul Dubois is the new president of the Odontological Society of Paris.

Dr. W. C. Barrett will be at the meeting of the Kansas Dental Association in Topeka.

A dentist in Boston was mulcted of $150 by a jury lately for extracting the wrong tooth.

Henry Sewill, Esq., is the new president of the Odontological Society of Great Britain.

Dr. Frank Bell, formerly of Cincinnati, and lately of Helena, Mont., has located in Chicago.

Dr. George O. Shafer, formerly of Champaign, Ill., has located at 1132 Sixteenth street, Denver, Col.

The Odontological Society, of Chicago, appointed five delegates to attend the Dental Congress in Paris.

There are thirty practitioners attending the post-graduate course of the Chicago College of Dental Surgery. The session opened April 1, 1889.

A practitioners' course has been started in the Dental Department of the University of Iowa. Ditto, American College of Dental Surgery.

Dr. J. Hooper, of Louisville, received the degree of doctor of medicine at the last commencement of the medical department of the University of Louisville.

The Southern Illinois Dental Society held a very successful meeting at Carbondale April 9 and 10. Dr. G. W. Entsminger presided and Dr. C. B. Rohland acted as secretary.

The Empress of Japan, who is soon coming to this country, will have in her suite two manicures, a dentist, fourteen doctors, ten fan-bearers, and a vast number of female attendants,

Mrs. Emma Eames Chase, daughter of Prof. W. H. Eames, and daughter-in-law of Dr. Henry S. Chase, both of St. Louis, one of the graduates of the dental department of the State University of Iowa, class of 1889, has contributed to the *Century Magazine* for March, 1889, a critical article on "Dutch Painters at Home."

The first edition of Evans' *Crown and Bridge Work* has been completely exhausted. A second edition is now in the course of preparation and will be issued in about two months,

The Kansas Dental Association will meet at Topeka, Tuesday, April 30, 1889. The programme is very lengthy, and if carried out must prove very profitable to all who are so fortunate as to be present. Westward Ho!

The students of the dental department of the Iowa State University, recently presented the Dean, Prof. A. O. Hunt, with an easy chair, as a testimonial of their esteem. The occasion was on the 44th birthday of Prof. Hunt, February 27, 1889.

The Meharry School of Dentistry, devoted to the teaching of colored persons, graduated six gentlemen at their last commencement. A new building is now in process of erection which will give additional accommodation for this department of Central Tennessee College.

According to the fourth annual report of the Board of Dental Examiners of the State of Kansas, issued December 15, 1888, it appears that in 158 cities and towns of that State there are 387 dentists practicing, and that of this number eighty are graduates of dental colleges.

The Chicago Dental Society voted to send ten delegates to the International Dental Congress, to be held in Paris, France, September 1st to 8th, 1889. Dr. A. W. Harlan was appointed Foreign Secretary for the society, to secure papers and organize a party to be present at the congress.

The Chicago Post Graduate School of Prosthetic Dentistry, at Chicago, was recently incorporated with a capital stock of $5,000, for instruction in mechanical dentistry, and for the manufacture of artificial dentures for the profession; incorporators, L. P. Haskell, E. J. Woodward and M. Stout,

Dr. J. N. Crouse wishes it to be understood that he is practicing dentistry for a livelihood, and he would be obliged to members of the profession by their responding promptly to his circulars in sending in $10 for membership in the Dental Protective Association. His services are entirely gratuitous in this matter.

The American Journal of Dental Surgery, a new dental quarterly, has come to hand. It is published in Chicago and is edited by I. Clendenen, M. D., and Miss R. M. McIntosh, D. D. S., assisted by G. North, D. D. S., G. A. Thomas, D. D. S., and L. D. McIntosh, D. D. S. The first issue contains seventeen pages.

John Edwards, an Illinois Central engineer, at Galena, Ill., who was supposed to be dying of quick-consumption, in a paroxysm of coughing emitted from his throat a bony substance, which, on examination, proved to be a tooth. A few weeks previously Edwards underwent the operation of having his upper teeth extracted, preparatory to the introduction of an artificial denture, and during the operation, which was rapidly performed, one of the teeth, without the knowledge of either the patient or operator, dropped down the throat, it is supposed, and lodged in the windpipe, where it caused the irritation which was thought to presage consumption.—*Exchange.*

Deaths from chloroform in extracting teeth have become quite frequent of late. In order to avoid danger there are three safe rules to follow—1. Do not give it. 2. If you do, let it be administered by a third party. 3. Insist on the patient being thoroughly examined alive and not at the post mortem.

To the Editors of the Dental Review:

Please accept my congratulations on the able and complete report, in one number, of our *great February meeting*. Every subscriber must feel a sense of personal obligation to the spirit of thorough-going enterprise which inspired a successful effort. Respectfully, Garrett Newkirk.

The next meeting of the Nebraska State Dental Society will be held in Wahoo, commencing on Tuesday, May 21, and continuing until Friday following. From the present outlook this promises to be the best meeting in the history of the society and a large attendance is expected. Several men of prominence in the profession will be with us. We should very much like to have the Dental Review represented, Respectfully, J. J. Willey,

Corresponding Secretary.

To the Editor of The Dental Review:

Dear Sir: At the regular meeting of the Chicago Dental Society, held Tuesday evening, March 5, 1889, the following resolution was adopted:

Resolved, That it is the sentiment of this society that it would be of interest to the members of the dental profession to become members of the Dental Protective Association of the United States.

Louis Ottofy, Corresponding Secretary.

The Odontographic Society, of Chicago, gave a dinner February 18, at the Commercial Hotel. This society is composed of some of the best young men in Chicago and immediate contiguous territory. The dinner was successful in point of numbers present, and for the admirable manner in which the speech-making was handled by the toast-master, Dr. H. H. Wilson. There were about fifty gentlemen present including the invited guests, among whom were Drs. Allport, Talbot, Black, Brophy, Marshall, Belfield, D. B. Freeman, Wassall and others.

For six years C. G. Wayt has been a practicing dentist in Louisville, Ky., and is said to have made a considerable fortune. Lately it developed that his name is not Wayt but S. L. Butler, and he is a nephew of Congressman Butler, of Tennessee, and of the Rev. George Butler, chaplain of the United States Senate. He left his home, near Richmond, Va., a little more than six years ago to avoid a heavy judgment for debt, and changed his name to avoid the annoyance of repeated efforts to collect, intending to make the money and pay. This he has done and now assumes his true name. He is vouched for by the Hon. Eustace Gibson, of West Virginia, and other well-known men.

Dr. Edwin Judson, an old and wealthy citizen of Chicago, died March 4, 1889. Dr. Judson, known to all the older settlers in Chicago, was born in Hartford, Conn., the 22d day of February, 1809. He was educated in the profession of dentistry in his native city, and practiced there until he came to Chicago about fifty years ago. He was among the very first dentists who located there, and practiced about twenty years, when he retired. Dr. Judson had for some years been in delicate health and had, in accordance with his doctor's orders, done much travel abroad. He leaves a widow and one daughter, the latter the wife of F. W. Tourtellotte. The deceased was known as a man of unimpeachable integrity and was universally esteemed. He left an estate valued at $383,000.

Messrs. J. B. Lippincott Company announce the publication of a Cyclopædia of the Diseases of Children, medical and surgical, by American, British, and Canadian authors, edited by John M. Keating, M. D., in four imperial octavo volumes; to be sold by subscription only. The first volume will be issued early in April, and the subsequent volumes at short intervals.

A thorough knowledge of the diseases of children is a matter of the greatest importance to most dentists as well as physicians, and as this is the only work of the kind that has been published in English, it will be invaluable as a text-book and work of reference for the busy practitioner.

The Medical Council of Great Britain have of late displayed unusual activity and severity in dealing with offending members of the profession brought before them. One of the latter (Mr. H. A. Allbutt) whom the Council removed from the Register for "infamous conduct," has gone to the law courts to seek redress and compel the Council to restore his name to the Register. The judges, however, decided against him. The Council are now threatened with another similar action from Mr. Partridge, the advertising dentist, whom they removed from the dental register. Perhaps these legal proceedings, and the expenses attended upon them, may somewhat diminish the zeal of the Council in dealing with irregularities.—London letter in the *Medical Record.*

There are doctors and doctors in England, but I think the social position of doctors generally has been somewhat underrated. A medical man who reduces himself to the level of a tradesman by keeping an open surgery and selling drugs across the counter, must, of course, not expect to be received in good society. Even in country districts, however, many a general practitioner may enjoy a very good social position, if he has the requisite manners, education and means. It is scarcely correct to say "dentists have no social position in England." The dental profession has made great strides during the past few years, and in London many a dental surgeon will meet a hospital physician or surgeon on almost an equality. They are not "doctors" because we have no D. D. S., but at least one dentist is an M. D., and uses it. Oculists take the same position as general surgeons, and one (Sir William Bowman) has been made a baronet.—London letter in the *Medical Record.*

The Judiciary Committee of the House of Representatives of Illinois, approved the Blair bill amending the Dental Practice act, after it heard what Dr. C. R. E. Koch and Dr. C. Stoddard Smith of the Illinois State Dental Society, had to say on the subject. It prohibits any person from practicing dentistry in the State without first having paid the required fee, passed the necessary examination, and received a license from the State Board of Dental Examiners. In Section 5, a provision was originally made which, however, was stricken out. It set forth that when a person desiring to commence the practice of dentistry in this State after the act shall take effect, and having a diploma issued, or purporting to have been issued, by any reputable dental college or dental department of any university, must present the same to the Board of Examiners; if the board is satisfied as to the genuineness of the diploma and the qualification of the applicant, it is empowered to issue a license to such a person to practice dentistry in this State on payment of the license fee. This the committee thought was unwise.—*Daily Paper.*

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

CHICAGO, ILL., March 27, 1889.

The Illinois State Board of Dental Examiners will meet at the "Newcomb," in Quincy, on Monday, May 13, 1889, at 10 o'clock a. m., at which time candidates for examination must be promptly on hand.

CHARLES R. E. KOCH, Secretary.

Dentists holding diplomas from reputable dental colleges can obtain license by forwarding the same to the Secretary, making the necessary affidavit, and paying a fee of one dollar.

All others must appear before the Board and pass a satisfactory examination before license will be issued. The fee for each examination is two dollars.

Practical demonstrations in operative and mechanical dentistry will be required.

Satisfactory proof of having had not less than three years' practical instruction and experience in operative dentistry will be required.

AMERICAN MEDICAL ASSOCIATION. FORTIETH ANNUAL MEETING—TO BE HELD AT NEWPORT, R. I., JUNE 25, 26, 27, AND 28, 1889.

NOTICE TO EXHIBITORS.

Intending exhibitors should address Dr. Chas. A. Brackett, Newport, R. I., Chairman Sub-committee upon Exhibits.

The following classes of applications will be entertained:

1. Medical books and stationery, charts and diagrams, busts, portraits, engravings, photographs, etc.
2. Hospital and ambulance plans and models.
3. Surgical instruments and supplies, general and special (gynæcic, obstetric, orthopedic, laryngeal, otic, ophthalmic, dental, etc.)
4. Microscopes, analysis outfits, and electro-galvanic apparatus.
5. Pharmaceutic products.
6. Rubber goods applicable to medicine and surgery.
7. Invalid furniture.
8. Invalid foods.
9. Sanitary appliances, as ventilators, filters, w. c. basins, traps, and similar necessities, and disinfectants.

As a large attendance is probable, while the space available for exhibits is comparatively limited, the advantage of early application will be perceived.

Choice of space will be given in accordance with the date of application.

Applicants should state the character of their proposed exhibits, that they may be assigned to their respective groups.

The Sub-committee reserves the right of rejection, in case of apparent reason.

HORATIO R. STORER, M. D.,
Chairman Committee of Arrangements.

PROGRAMME OF THE ILLINOIS STATE DENTAL SOCIETY.

President's Address—Dr. Geo. H. Cushing, Chicago.

Report of Committee on Dental Science and Literature—Dr. Louis Ottofy (Chairman), Chicago.

Report of Committee on Dental Art and Inventions--Dr. J. Frank Marriner (Chairman), Ottawa.

History of Operative Dentistry—Dr. C. A. Kitchen, Rockford.

Filling Proximal Cavities in Bicuspids and Molars—Dr. K. B. Davis, Springfield.

Escharotics and Coagulants—Dr. A. W. Harlan, Chicago.

The Development of the Roots of Teeth—Dr. W. H. Eames.

The First Period of the History of Dental Literature—Dr. J. J. R. Patrick, Belleville.

New Thoughts on Cleft Palate—Dr. W. B. Ames, Chicago.

Report of the Supervisor of Clinics and a Discussion of the Same—Dr. T. W. Prichett, Whitehall.

Two mornings will be devoted to Clinics at this meeting, and the following gentlemen have promised to operate:

WEDNESDAY A. M.—

1. Dr. G. S. Salomon, Chicago—Cohesive Gold Filling with Electric Mallet.
2. Dr. B. D. Wikoff, Chicago—Gold and Porcelain Crown.
3. Dr. A. W. Harlan, Chicago—Will treat cases of Pyorrhea Alveolaris.
4. Dr. E. K. Blair, Waverly—Cohesive Gold Filling with Hand Malleting.
5. Dr. C. N. Johnson, Chicago—Preparing Root Canals for Filling.
6. Dr. H. H. Fitch, Pekin—Filling Root Canals.
7. Dr. S. Finley Duncan, Joliet—Treating Exposed Pulps.
8. Dr. J. W. Cormany, Mt Carroll—Will fill difficult Cavities in lower Second and Third Molars with Amalgam without the aid of the Rubber Dam, using a very simple Appliance to hold the Napkin and Tongue in Place.
9. Dr. T. W. Brophy, Chicago—Filling of Crystalloid Gold.
10. Dr. G. V. Black, Chicago—Porcelain, Set with Gold as a filling for Labial surfaces.

THURSDAY A. M.—

1. Dr. D. M. Cattell, Chicago—Cleaning Teeth.
2. Dr. E. B. Call, Peoria—Gold Crown on Superior Bicuspid Root.
3. Dr. C. P. Pruyn, Chicago—Silver Amalgam Fillings.
4. Dr. M. L. Hanaford, Rockford — Cohesive Gold Filling with Hand Malleting.
5. Dr. E. A. Royce, Chicago—Non-cohesive Gold Fillings.
6. Dr. J. J. Jennelle, Cairo—Root Fillings.
7. Dr. A. S. Waltz, Decatur—Cohesive Gold Filling with Hand Malleting.
8. Dr. Wm. N. Morrison, St. Louis, Mo.—Gold and Platinum Filling, Implantation.
9. Dr. E. J. Greene, Peoria—Cement Fillings.
10. Dr. W. B. Ames, Chicago—The Preparation of Copper Amalgam for Filling.
11. Dr. C. S. Case, Jackson, Mich—Obturators and Artificial Vela.

P. J. KESTER, Chairman Ex. Com.

The successful termination of the late anniversary meeting at Chicago, brought forth an expression from one of the most prominent dentists of the East, to the effect that it would not be many years hence when the profession in the West will lead the East in the matter of successful dental societies, as well as in dental colleges and dental journalism. That western men take a great deal of interest is not denied, and the transactions of the American Dental Association, just issued, indicates that the interest manifested is in excess of the interest of eastern dentists. The American Dental Association is the typical national organization of dentists, and from its list of membership the following interesting data are gleaned:

The Association has a membership of 170, of whom 92 were present at the Louisville meeting last year. Of the 92 in attendance, 20 hailed from the great prairie State. The membership of 170 is made up of practitioners, of whom 112 come from 22 cities, each contributing more than one member, while the remaining 58 come from that number of different cities and towns. The 22 cities contributing the largest number are divided as follows:

Chicago,	28	Cleveland,	3
New York,	15	Burlington,	2
Philadelphia,	10	Indianapolis,	2
Boston	8	Milwaukee,	2
Louisville,	5	Minneapolis,	2
St. Louis,	5	Nashville,	2
Baltimore,	4	New Orleans,	2
Cincinnati,	4	Washington,	2
Detroit,	4	Youngstown,	2
Brooklyn,	3	Pittsburg,	2
Buffalo,	3	Fort Wayne,	2

It appears that one-fourth of this number comes from the western metropolis. The three largest cities of the union, New York, Philadelphia and Brooklyn, furnish the same number as Chicago alone. The membership according to States is divided as follows:

Illinois,	33	Connecticut,	3
New York,	27	Georgia,	3
Ohio,	14	Kansas,	3
Pennsylvania,	12	District of Columbia,	2
Massachusetts,	10	Minnesota,	2
Missouri,	10	New Jersey,	2
Iowa,	7	Rhode Island,	2
Kentucky,	7	Louisiana,	2
Michigan,	7	Tennessee,	2
Wisconsin,	5	Delaware,	1
Indiana,	4	Maine,	1
Maryland,	4	South Carolina,	1
California,	3	Texas,	1
France,	1		

The West contributes 88 members; the East and New England, 60; and the South 21.

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society, held on Tuesday evening, April 2, 1889, the following persons were elected officers for the ensuing year: President, P. J. Kester; First Vice-President, D. M. Cattell; Second Vice-President, W. J. Martin; Secretary, A. E. Baldwin; Corresponding Secretary, Louis Ottofy; Treasurer, E. D. Swain; Librarian, A. W. Harlan. Member of the Executive Committee, J. Austin Dunn. Board of Censors, F. H. Gardiner, C. F. Hartt, and L. L. Davis.

CHICAGO DENTAL CLUB.

The following are the officers of the Chicago Dental Club, elected at the annual meeting held January 28, 1889: President, I. A. Freeman; Vice-President, C. R. Baker; Secretary, C. Stoddard Smith; Treasurer, E. M. S. Fernandez; Member Executive Committee, C. E. Bentley.

C. STODDARD SMITH, Secretary.

EASTERN ILLINOIS DENTAL SOCIETY.

DECATUR, Ill., March 20.—The Eastern Illinois Dental Society, in session at Decatur, Ill., last month, selected Mattoon, Ill., as the next place of meeting in March, 1890. Officers elected were: President, Dr. A. S. Waltz, Decatur; Vice-ident, Dr. Shaffer, Champaign; Secretary, Dr. Lumpkin, Mattoon; Treasurer, Dr. Dwight, Danville; Executive Committee, Dr. Campbell, Mattoon, Dr. Shaffer, and Dr. Dwight.

ILLINOIS STATE DENTAL SOCIETY.

The twenty-fifth annual meeting of the Illinois State Dental Society will be held at Quincy, opening Tuesday morning, May 14th, and continuing four days. As this will be the quarter centennial anniversary of the organization of the society, an unusually large attendance of its members is expected. Numerous accessions to membership are hoped for, and dentists from other States are cordially invited.

GARRETT NEWKIRK, Secretary.

MICHIGAN DENTAL ASSOCIATION.

The thirty-fourth annual meeting has been postponed until June 4th, 5th and 6th. The meeting will be held in Grand Rapids, due notice of which will be published in our May number.

IOWA STATE DENTAL SOCIETY.

The Iowa State Dental Society will gather in annual meeting at Des Moines, the first Tuesday of May, 1889. A very interesting programme has been issued, and dentists are cordially invited to be present from adjoining States.

NORTHERN INDIANA DENTAL ASSOCIATION.

Drs. J. E. Waugh, Angola, W. W. Shryock, Fort Wayne, and J. M. Teal, Kendalville, have issued a call for the organization of the above association at Fort Wayne, Ind., May 1, 1889. We hope there will be a large meeting and that the association will prove of great benefit to dentists and the community at large. District societies are becoming a necessity as the dental population becomes more dense.

MISSISSIPPI VALLEY ASSOCIATION OF DENTAL SURGEONS.—OEFICERS FOR 1889.

President, J. R. Callahan ; First Vice-President, M. H. Fletcher ; Second Vice-President, L. E. Custer ; Corresponding Secretary, W. D. Phillips ; Recording Secretary, H. T. Smith ; Treasurer, F. A. Hunter ; Executive Committee, M. H. Fletcher, W. H. Sillito. L. E. Custer.

STUDENTS' SOCIETY, NEW YORK COLLEGE OF DENTISTRY.

To the Editor of The Dental Review:

Dear Sir: The election meeting of the Students' Society was held at the college, Monday, February 4th. The following officers were elected for the season 1889-'90: President, C. G. Pease; 1st Vice-President, D. W. Byrne; 2d Vice-President, G. W. Hann; Secretary, S. P. Russell; Assistant Secretary, C. H. Emerson; Treasurer, C. C. Richardson; Librarian, H. C. Crosscup.

L. S. Rosenstiel, Jr., Assistant Secretary.

DELEGATES TO THE INTERNATIONAL DENTAL CONGRESS AT PARIS, SEPTEMBER, 1889.

The President of the Chicago Dental Society has appointed the following members of the Society as delegates to the Congress: A. W. Harlan, J. N. Crouse, T. W. Brophy, J. A. Swasey, P. J. Kester, W. W. Allport, A. E. Baldwin, Louis Ottofy, L. L. Davis, J. W. Wassall, and W. B. Ames.

COBALT AND NICKEL DECOMPOSED.

Munich, Jan. 15.—Dr. Kruss, a chemist of this city, has succeeded in decomposing cobalt and nickel, both of which have hitherto been supposed to be elementary substances.

A SINGULAR SUIT.

A man while eating lettuce in a Boston restaurant came upon a piece of gravel so suddenly that it snapped a tooth off. He sued the proprietor of the restaurant for $500 damages. The judge gave the case to the jury. The latter found out what an entire set of new false teeth would cost and made that the figure of their award.

AMERICAN DENTAL SOCIETY OF EUROPE.

The above society will meet in Paris, August 6, 1889. As this date is the same as the day of meeting of the American Dental Association at Saratoga, none of our members can attend the two meetings. We call the attention of our friends to the above, hoping they can postpone the date of their meeting for about two or three weeks.

THE

DENTAL REVIEW.

VOL. III. CHICAGO, MAY 15, 1889. NO. 5.

ORIGINAL COMMUNICATIONS.

A CRITICISM.

BY CALVIN S. CASE, D. D. S., M. D., JACKSON, MICH.

The last year has witnessed many curious examples in our dental literature of the present popular tendency to reach beyond the confines of known material forces and dabble with the subtle capabilities of mind. These metaphysical flights are usually passed without comment or surprise as evidences of unusual scientific learning, since the "Christian Science" craze has so familiarized the masses with the mysterious phraseology of "hoodooism" in general, and made it quite unsafe to one's position in cultivated circles to admit ignorance or no faith in the possibilities and "power of mind over matter." But it is a sad commentary of the times when medical or dental writers—however well up in that branch of physiology which pertains to nerves and nerve forces—imagine it necessary to go beyond the limits of the physical sciences, and define forces of a purely psychical nature; and especially when, with questionable and unscientific philosophy—calculated to carry weight with the uninformed—they boldly proceed to the establishment of things unacknowledged by the most advanced specialists. Like Darius Green in his attempt to transcend the power of his sphere, such men are forgetful or ignorant of the fact that they have leapt—often with untrained minds—into a far different, special and distinct field of thought, which has been developed and rounded into a perfect system of mental philosophy by the great intellects of every age since the days of Plato, and which stands to-day upon as firm a scientific basis as any of the special sciences, as may be well attested by an intelligent perusal of "Cosmic Philosophy," by John Fiske, or "Synthetic Philosophy" by Herbert Spencer.

In view of this fact it is a matter of no little surprise to find so many educated people ready to voice the vague and fantastic notions of modern idealistic "faith curers," without, apparently, having made an effort to master the rudiments of philosophy from a scientific standpoint.

In the present article I wish to call attention to certain portions of a paper entitled "What Shall We do with Sensitive Teeth?" by Dr. Ottolengui, which was read before the Central Dental Association of Northern New Jersey, and published in the July, 1888, number of the *Archives of Dentistry.*

Emanating, as it does, from one of the most prominent and learned dental societies, and standing for months unchallenged as part of our published dental literature, it may seem presumptuous in me to attempt a criticism of its scientific merits. Yet, this I am constrained to do, for under the guise of scientific phraseology, I find the paper deliberately dallies with grave and weighty questions in psychology, physiology and histology.

It not only attempts to prove by argument alone the existence of nerve fibre in dentine and enamel, but presumes to censure a learned profession for not accepting this theory long ago, even in the entire absence of tangible proof; the whole designed to receive more credence from the casual reader than it deserves, while, as a matter of fact—as I shall endeavor to show—the evidence deduced is of a decidedly untrustworthy character, and of no scientific value whatever. Furthermore, I have noticed that many dentists have recently dropped into the way of speaking of "nerve fibrillae in dentine" as a settled fact, and I presume this to be partly due to the influence of this paper, supported by the high standing of its author and the silent endorsement which it has received from society and press.

Let us begin with: "Pain is considered to be unpleasant sensation, using the word as the antithesis of ideation."

To a person unskilled in metaphysical methods, the sentence (and the one following it) might be passed as a scientific axiom too occult for ordinary comprehension. We know, without being told, that "pain is unpleasant sensation;" in fact, that pain is a word used to define a certain class of unpleasant sensations, the same as bitter is a word used to define a certain class of taste sensations;

but the balance of the sentence: "using the word as the antithesis of ideation"—with no further attempt to continue the line of thought with a clue to the meaning of this very strange definition and its practical bearing—is to me such a blind and ambiguous addition, that it makes one feel as "Scotty" did when he had that little talk with the "gospel sharp" in Mark Twain's "Roughing It." It would seem, however, in the high-sounding sentence that immediately follows, there is an attempt to solve the mystery, viz.: "Both sensation and ideation depend upon mind for existence, and *therefore* pain must be a mental aspect."

That, certainly, is a crowning conclusion, but of doubtful importance when we remember that our every perception, from that which we see, hear, taste, smell, feel or experience, is no more or less than a mental—or subjective—aspect, producing in us conceptions of the qualities and relations between objective phenomena.

It further says: "If we admit, as we must, that pain is largely dependent upon the mental *altitude* toward the parts attacked, it at once becomes the duty of the intelligent operator to devote much care and attention to this view of the case."

Following such a sweeping assertion, "If we admit, *as we must*"—a kind of phraseology the doctor seems to be very profuse with—one has the right to expect a thoroughly well-founded fact, couched in terms of distinct meaning. Yet, in this and other instances, he does not hesitate to follow with lame and ambiguous conclusions, which, if construed literally, would be an insult to common sense. If he had followed with: Pain is modified and largely influenced by the *attitude* of the mind—it would have been truthful and more in keeping with the very commendable theme which it is used to introduce.

I have taken the liberty to characterize these immaterial efforts in order to give what I believe to be a proper status to the value of the paper, where it deals with transcendental portions of other and more important questions, further on. It might with propriety be suggested, however, if it were really desirable to define pain in this connection, in order to prove the *ne plus ultra* of his specific for sensitive dentine, that it be put into simple, comprehensible terms, instead of giving us an isolated sample that is strikingly suggestive of mental science vagaries.

Now, in regard to the real question at issue he says: "It is further admitted that pain can only be experienced by an organized living being, and that it needs both nerve and nerve force for its exhibition. This being true, it seems singular that the discovery of the fibre in enamel should have been so recently made and that now it should be doubted."

To me "it seems singular" that any one should make the latter condition necessarily follow as a direct inference from the former proposition, or see the slightest reason for corollary relations.

In another place he continues: "It was claimed earlier in the paper that the existence of nerve fibre in the enamel should have been suspected, if not discovered, long ago. If we admit, as we must, that it is the special function of nerve to transmit sensation, and if pain is one kind of sensation, wherever we can produce pain there must we look for nerve, and our not finding it is but negative evidence that it does not exist. * * * If we find the dentine sensible we must attribute it to nerve, and nerve which reaches the point where contact produces pain."

One would hardly expect to find, in this era of advanced philosophical thought—in what purports to be a scientific paper—an attempt to prove the nature and quality involved in an objective phenomenon by purely subjective evidence.

Let me say right here, it is not the object of this article to attempt to disprove the possible existence of nerve in any of its forms in dentine or enamel, but rather to show the futility of an hypothetical argument *which assumes to establish this, as an irrefragable fact, in the absence of positive proof.*

Admit, if you please, that it is the special function of nerve fibres to transmit impulses that result in sensations—what does it prove? Certainly not that absurd string of stuff which the doctor assumes for it. One could almost imagine that he believed, and intended to imply, that pain was some peculiar quality or thing that had its existence outside the brain, and its location at the origin of its cause, if not along communicating lines to the brain. He probably wishes to assert that nerve fibres are the only medium of communication between the brain and the prime cause of a sensation, and therefore must necessarily reach to and become one of the factors of the cause, because—and so far as I can see *only* because—"we must admit the known physiological property of nerve fibres."

I shall endeavor to show that the argument is valueless, and further, that a painful or pleasurable sensation gives us no right to judge of the nature of cause that cannot, otherwise, be compared and classified; nor does it suggest in the slightest degree that which actually takes place in the intervening space, in order that it be conveyed to our senses; and therefore, from sensations alone, it is absurd for one to assume that there are no outlying media *in an unknown field*, beyond the peripheral extremities of nerves, other than nerve fibres *per se*, or even "nerve substance," capable of transmitting force which finally results in a sensation of pain—or pleasure.

"Wherever we can produce pain there must we look for nerve." If the sensation of pain was located "at the point of contact" in a tooth or tissue of the body, instead of in the brain, the argument would have undoubted force.

But what do we produce as an initial condition? Probably an exalted vibratory motion of the particles of matter in some complex medium contained within the dentinal tubes, which may or may not be nerve fibre or nerve substance proper—I maintain there is no subjective reason for believing it is either—or anything more highly organized than differentiated protoplasm, which possesses the inherent property of transmitting vibrations—or some form of force—to the peripheral nerve-endings of the pulp. Here the force, coming, as it may, from an outlying medium, into the grasp and vital tension of the nervous system, is probably changed in its character by the sensory end-organs, and sent on its way as afferent nerve impulses.

Before nerve impulses reach the brain, from most parts of the body, they may have been received by sympathetic, or spinal ganglionic cells, and efferent impulses sent back over motor fibres, but until they *do* reach the brain and are properly translated by a perceiving mind, they have in themselves no absolute quality of the states of sensation, any more than the forces set in motion by a voice speaking into a telephone have, in themselves, the quality of sound or language until received and translated by the inexplicable power of a perceiving brain.

Here an outlying medium—the air—beyond one of the peripheral endings of a telephone system, is thrown into vibratory motion by the vocal cords, which, being received by the diaphragm of the transmitter (or end organ), is transferred to the wire (or fibre) changed in its character, or form of force, by the electrical tension of the system, and so sent on its way—but not as language any more than a nervous impulse is sensation.

Nearly, if not every, sense organ we possess receives and translates its special force of sensation from media beyond the peripheral endings of its communicating nerve fibres, and in the absence of satisfactory proof to the contrary, it is as reasonable to believe that outlying media beyond the peripheral endings of the dental nerve are as capable of receiving and transmitting wave currents to the pulp and on to the brain, producing pain, as there exists outlying areas that transmit light and sound that ultimately result in sensations which we know as sight and hearing.

I suppose no one would insist, wherever we can produce the sensation of a book lying upon the table, "there must we look for nerve, and our not finding it is but negative evidence that it does not exist." Yet, this example—as far fetched as it may at first appear—in its inceptive condition or *a priori* origin, is as purely a sensation as that which we are considering. It is only by experience that we learn to classify these lights and shadows, and all sensations from objective phenomena into intelligible conceptions.

While we sit at the window reading we suddenly feel an annoying, if not a painful *sensation*, which leads to the *perception* that it is caused by a bright ray of sunlight thrown into our eyes; and, if our early education has not been sadly neglected, a certain combination of *ideas* will produce in us the *conception* that it is reflected from a piece of looking-glass in the hands of the smart boy across the way.

Nor is it necessary for us to go outside the body for nerveless media that possess the property of transmitting force which results in every character of sensation. Cornea, lens and humors of the eye are but media which transmit light-waves to the rods and cones; so, also, the peripheral covering of the body is but a medium, transmitting heat-waves and impressions of contact to the tactual sense organs; and throughout the body the elements of which the tissues are composed, are constantly at work propagating forces from one cell to another—guarded and guided by nerves, to be sure, yet perceptibly distant from them—and possessing inherent properties which render them media of communications that are finally transformed into nerve impulses and, possibly, sensations.

For instance, striated muscle fibre—though an organ whose function is entirely dependent upon nerves—if properly stimulated, will propagate this force throughout its entire length, causing molecular changes sufficient to markedly affect the physical aspect of its cells; and what is more to the point, these molecular vibrations of the muscle-cell elements—or force currents—upon reaching the muscle nerve, will be transformed into impulses that will produce the contraction of a second muscle, to which it has been attached.

In the absence of satisfactory microscopical proof, what reason have we, therefore, to exclude teeth from the possible possession of elements having functional properties similar to those of other tissues of the body, and to insist that the peripheral endings of the dental nerve must differ from others and invariably "reach the point where contact produces pain."

Nor do we know things as they actually or objectively exist, but only as they produce in us certain relative states of perceptive or subjective sensation, and which become intelligible only as they differ from each other. Sound or musical tones produce in the uneducated mind no thought or conception of atmospheric vibrations. If we watch a piano string while it is struck and see that it vibrates simultaneously with a certain musical tone, the idea of connecting the two sensations which it produces—through the medium of the optic and auditory nerves—is only by education, not that they bear the slightest resemblance or convey the remotest impression of the force currents set in motion in external media. An elderly gentlemen once became quite angry with me for insisting upon the school-boy proposition that "a tree falling in the forest a hundred miles from any ear would produce no sound," he swearing "that it was stuff and nonsense to imagine that the great noise of the crash did not occur just the same, whether there was a being within ear-shot or not." And is it not difficult for us to realize that that occurrence did not disturb a death-like silence? That only particles of air were suddenly thrown into great commotion, which traveled outward in concentric waves to be finally lost in the great ocean of silent motion.

The sensation of redness is red only as it differs from green or some other color sensation, and does not in itself give us any conception of hundreds of trillions of undulatory waves projected at a velocity of 180,000 miles per second against the peripheral end organs of the optic nerve during every beat of the heart. And, further, while molecular physics has enabled us to think of objective qualities of light in an intelligible manner, the knowledge becomes but a mere figment of the brain when we must assume for a medium of transmission that hypothetical some-what—familiarly known as "ether"—which in itself is absolutely nothing to every test of chemistry. It is something only to the sense of reason; for so long as we assume vibratory motion one of the prime factors in the transmission of light, we simply cannot think of motion without something—some matter—that vibrates; any more than we can think of infinity of time or space, or indivisible atoms. Mr. Fiske says: "We reach the conception of vibration of particles only by inference from the states of consciousness aroused in us by visible or palpable vibrations. Certain subjective experiences of undulatory movement, as when a pebble is dropped into still water, or as when a string is made fast by one end and twitched at the other, beget in us the conception of vibration; and this conception we transfer in thought to those molecules and atoms of which we believe material bodies to be constituted. So far, then, from interpreting our feelings of light, heat, and sound, in terms of the objective reality, we have merely been interpreting certain states of consciousness in terms of other states. Or, to put the same statement into different language, we have regarded the phenomena of sound, heat, light, and actinism as adequately *explained* when we have classified them with certain other phenomena of vibratory motion. We merely affirm that a cause which, under a given set of conditions, will produce certain states of consciousness within us, will, under a different set of conditions, produce certain other states of consciousness. Concerning the nature of the cause, whether we call it vibrations or are content to go on calling it heat or light, we affirm nothing and can know nothing."

[TO BE CONTINUED.]

FACULTY ADDRESS.*

BY GEO. H. CUSHING, CHICAGO, ILL.

Gentlemen of the Graduating Class: I have been deputed by the faculty to say to you the few words that will mark the close of our mutual relations as teachers and students, and to wish you

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* Delivered at the Grand Opera House to the students of the Chicago College of Dental Surgery.

God-speed in the professional life upon the threshold of which you now stand.

I would have you believe that what I shall offer you in the pursuance of this duty will not be mere formal phrases, but the expression of genuine regret at the severing of relations that have been very pleasant to us all.

Those of us who have been brought more closely in contact with you, and thus have learned to know and appreciate more fully your better qualities, must necessarily feel a deeper touch of sadness as we say good bye, but our good wishes will go out to you the more heartily for this very reason.

For the six months last past you have faithfully attended the course of study prescribed, and have diligently endeavored to master the subjects, both theoretic and practical, which have been placed before you, and to-day you have assembled here to take part in the public ceremonies attendant upon the conferring of the formal certificate which constitutes you Doctors of Dental Surgery.

As I have watched your smiling, happy faces since your agony of suspense was terminated in the early hours of Saturday morning, I have wondered how many of you understood the real significance of this coveted parchment that you have striven so hard to gain, and of these public ceremonials you are so eager to take part in, and it occurred to me that it might be profitable for us at this time briefly to consider what the Diploma stands for, and what obligations it imposes on those upon whom it has been conferred.

I think that none of you regard it as evidence of your having attained the sum of professional knowledge, or of your pre-eminent qualifications as practitioners of dentistry. If any of you do so regard it, the sooner you disabuse your minds of that idea the better it will be for you, and for your prospective patients.

The most that it can be claimed as formally certifying to is, that you have so faithfully pursued your studies, and have given such evidence of progress that the faculty think themselves justified in recommending you to the public as *likely to become* competent practitioners. The intelligent public can only accept it thus.

Some of you, I know, realize that you have only just laid the foundation for professional qualification, upon which the superstructure—whatever it may prove to be—must yet be built, and I think you *all* feel that the foundation is one on which may be erected as splendid and complete an edifice as you choose to make it.

The above is the obvious signification of the Diploma—what it shows upon its face. But, does it stand for nothing more? Are there no obligations implied by you in its acceptance?

Unquestionably there *are* implied obligations, and the Diploma *does* stand for much more.

These ceremonies, which are popularly regarded as only a brilliant pageant, bright with flowers and fair faces, intended to give eclat to entrance upon professional life, when rightly interpreted have a much deeper significance. They are really the consecrating services which bind you to the pursuit of a humane calling, with all that that implies. And here let me say that when you fully comprehend "all that that implies," you will have taken a long stride in your education.

Though no vows are here spoken, yet when you accept that diploma you are not the less religiously bound by the great unwritten law of ethics—the law of the science of human duty—to a devotion to study, to a cultivation of all those faculties essential to making you better practitioners, to the development of all those virtues which are expected to be most conspicuous in professional men.

The diploma then not only certifies to the fact that the faculty consider you fitted to be received as younger brothers in the profession, but it stands pre-eminently as the seal of your consecration—the witness to the unspoken pledge of your fidelity to the special service of humanity upon which you enter to-day.

Lay well to heart what such consecration means, and as you live up to the standard of these high promises so shall your status as professional men, and benefactors of your race, be fixed in the future.

It is not unlikely that upon this occasion you may expect from the faculty some suggestions as to the best course for you to pursue in order to secure what you all probably hope for—fame and fortune; in fact, to point out to you the "royal road" to success. Fortunately there is no such road! Were it otherwise the stimulus to advancement would be wanting, and progress would practically cease. The way must be long and weary for many before the goal of their ambition is reached, but the man who reads his diploma aright, and recognizes it as the seal of his consecration, may be sure that the goal will some time be won.

There are two kinds of success, one of which we hope you will not strive after, that is pecuniary success, regardless of the means of securing it. While the financial aspect of professional life *must* be considered, it should be subordinated to those higher aims that look more to the benefits to be conferred than to those that are to be derived.

Your patient's highest interest is always first to be considered, and a man who does not fully recognize this has no right in the ranks of a profession devoted to the alleviation of human suffering.

The highest professional success can only come to those who love their work for its own sake, and who, by their utmost endeavor, broaden the field of the beneficence of their calling, and the man who earnestly does this may safely trust the financial result to, more or less satisfactorily follow.

There are some methods—unfortunately too common—that are to be deprecated, to which I wish briefly to allude.

Do not strive to reach eminence by detracting from others and over-praising yourself, and do not mistake notoriety for fame.

The man who always speak disparagingly of his brother practitioner, and whose self-praise is ever on his own tongue, or who surreptitiously advertises himself by means of interviews or notices of himself in the public press, ostensibly editorial, but paid for at the rate of a dollar a line, may be more talked of than one who always speaks well of his confreres, is modest in speaking of himself, and devotes his energies to the highest interests of his patients. But the aims of the former are ignoble and his methods base, and in his secret heart is ever present the conviction, no matter how much notoriety he may gain, that fame does not await him, and that his name will die in merited obscurity so soon as his ungenerous breath shall leave his unwholesome body.

There is probably no service to God more acceptable than man's service to his fellow man, and he who so recognizes his consecration as to make devotion to his profession a part of his religion, will have a source of satisfaction in an approving conscience unknown to him who is governed solely by sordid motives.

Such a man need not fear that he will be forgotten—"his good deeds will live after him." Who would not rather that a professional brother should say of him, "You can trust him implicitly," than that he should say, "He is a fine operator, but otherwise I cannot recommend him?"

The relations of professional men to their patients are of a peculiarly sacred character, and you are bound to recognize these high obligations and to base your actions on the golden rule if you would attain to the only success worth striving for.

It is doubtful if the prosperous men in any calling in life could tell you just what led them to success, but the following incident may perhaps be appropriately alluded to here:

It is related of that great soldier and patriot, General Sheridan, that upon some occasion of a reunion with some of the surviving boys who went with him to victory, one of them asked him to what he attributed his great success, and his reply was something like this: "Well, boys, I don't know, only that when I was first appointed a lieutenant I said to myself, 'I will make just the best lieutenant I know how,' and I did. And so, when I was appointed a captain I said, 'I will make the best captain I can,' and so on with each promotion. I made the very best I could and that is all I know about it." And so finally he came to be the grand hero of the valley of the Shenandoah and of Winchester.

I know no better rule than this, and if you all will determine to make of yourselves the best dentists that you can, you may be sure you will make good ones, if you have the proper material in you out of which such can be made.

And now, in bidding you farewell, let me say, that while we have been laying down for you a chart of implied obligations, we have not forgotten that we also have implied obligations equally binding toward you.

We recognize that we stand as your sponsors and hold ourselves always ready to counsel you if you ask it, and to encourage and cheer you should you faint by the way; and while we hold you to the obligation not to bring discredit to your Alma Mater, we equally accept our obligation not to allow your Alma Mater to bring discredit upon you, but ever to bear higher and higher its standard, so that you may always feel an increasing pride that you can claim her as your professional mother.

You go out from us to-day, friends and brothers, I trust in the truest sense of the term, and bear with you our sincere and earnest wishes for your health, happiness, and truest prosperity. May the fruition of your hopes be as full as the brightness of the promise of the hour, and may time develop in you that wisdom, skill, and integrity which shall be the evidence that you have fully appreciated what your diploma stands for.

In behalf of the faculty I bid you good-bye.

BLEACHING TEETH.*

BY GARRETT NEWKIRK, M.D., CHICAGO, ILL.

I have been very recently and wholly unexpectedly called upon to fill a vacancy in the authorized programme of this society, which has been made to include among the many subjects to be discussed that of *bleaching teeth.*

I can assign no other reason for my misfortune and yours on this occasion, but that the Secretary has presumed on my well-known weakness of character, in not being able readily to say "*No*," or, if I do, the result is often similar with the case of the young man in the parable, who said, "*I go not*," but afterward he repented, and went.

The time allotted to me having been so short, the paper will probably be too long; for if you have had any experience in "sugaring-off," or "stirring" apple butter, you know it takes *time* to boil things down.

Sir Walter Scott, being asked why he had written his *life of Napoleon* in two volumes, replied, "Because I had not time to write it in one."

BLEACHING.

In the commercial and domestic arts, the term means to whiten cloth, or any fabric.

In dentistry it means, not to make a tooth *white*, strictly speaking, but to remove an accidental discoloration, and restore the organ as nearly as may be to its natural color, which may have been far from white.

THE DISCOLORATION

It may be well to consider briefly the nature and cause of the discoloration we wish to remove.

Authors are generally agreed that the primary agent of discoloration is chiefly, if not wholly, *Sulphur with Hydrogen;* Hydrogen Monosulphide; Sulphydric Acid; Hydrosulphuric Acid, or Sulphuretted Hydrogen. (Fownes.)

We know this substance to be the invariable product of putrefaction. It is a gas of light specific gravity, as compared with air 1.117; hence easily diffusible. Most people become familiar with it early in life, for it is well represented in the odor characteristic of putrid eggs. Politicians sometimes have their earlier memories refreshed late in life, and the dentist likewise, when he punctures the chamber containing a putrid pulp. It is also more or less constant in attendance within the colon where retrograde changes have begun in the residual matter of digestion.

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*Read Before the Chicago Dental Society.

It is the principal cause of the "bloating" which takes place shortly after the death of an animal, when, if it find not vent by a natural orifice, the integument is ruptured by forcible distension.

Though highly offensive it is said to be non-irritant in contact with living tissue. In a sense, however, we must certainly except to this proposition as regards the olfactory nerves.

Wherever a pulp dies there is death of all organic matter connected therewith in the substance of the tooth. The *amount* of matter will depend upon the age, temperament, heredity, which determine the size of the pulp and density of the dentinal structure.

A pulp *may* die and not become putrid. If so, no gas would be formed, and no discoloration take place. This is somewhat rare. Usually, soon or late, quickly or slowly, disorganization takes place with the sure evolution of sulphur and hydrogen.

If, through an open cavity of decay, the gas has free escape, but little discoloration may ensue. But if confined by a layer of dentine, or dense debris, or a filling in the cavity, or a "capping"—a frequent condition—or by the natural walls, it is forced in its most concentrated form into the minutest ramifications of the dentinal tubuli. How great this pressure may be is evidenced by the fact that teeth have been ruptured by it, and even enamel has seemed to be discolored.

It ofttimes happens that the first or chief evidence we have of the death of the pulp under fillings and cappings is the darkening shade that meets our eye. So that, aside from the dangers of inflammation and abscess in our attempt to save doubtful pulps of uncertain value, we may remember the further danger of tooth discoloration.

Sulphuretted Hydrogen has an acid reaction with litmus, and manifests the properties of an acid. It will unite with any of the inorganic elements of the tissues wherein itself is formed, iron from the blood, lime or carbon. Hence, the dark substances formed are probably sulphides or bi-sulphides ; substances that once formed may not be easily reached or removable. We cannot always force a decomposing agent where the diffusible hydrogen-monosulphide gas has been driven under pressure; so that, here as elsewhere, an ounce of prevention is better than a pound of cure.

BLEACHING AGENTS.

Quite a list of substances might be given which have at some time been used and recommended for bleaching discolored teeth. With perhaps a single exception, they have been compounds containing chlorine. The principle has been apparently simple enough—that of decomposing the salt and liberating free chlorine in the cavity. And it has been the prevailing thought that chlorine gas, permeating the dentinal tubuli, was the agent which effected change of color of the tooth.

So late a work as the *American System of Dentistry*—article by Dr. Truman—sustains this view. Dr. Barrett, however, denies it. He says:

> There is no power in chlorine to change color. The active agent is oxygen. When chlorine is used in the process water is absolulely essential, hence the instructions sometimes given to exercise care in keeping the cavity into which chlorine gas is admitted dry, show an ignorance of the principles involved. Moisture is essential, for the chlorine having a greater affinity for the hydrogen of the water unites with it and sets free the oxygen, and this is the agent that does the work. * * * * * * * * * *
>
> The decomposition of common salt in a cavity by electrolysis, or any other means, sets free the chlorine, which unites with the hydrogen of any water that may be present, and this unites with the coloring matter, usually some form of carbon, and discharges its color.
>
> Chlorine gas is commonly used in bleaching teeth, because it is the most easily generated of the agents that will liberate free oxygen.—*Editorial, Ind. Practitioner, Nov., 1887.*

Dr. Barrett's theory would seem to be borne out by the fact that, if I mistake not, the presence of a degree of moisture is depended on in the use of chlorine by the bleachers of cloth, particularly the dew, on account of its purity. Also further, by the fact that peroxide of hydrogen has proved to be an excellent bleaching agent—its virtue being of course entirely in its extra equivalent of oxygen easily liberated. And herein lies the reason for using the peroxide instead of water in connection with the chlorine salts, as recommended by Dr. Harlan, a double supply of oxygen being thus set free.

The bleaching properties of the hydrogen deutoxide was not discovered by dentists. They have been known and largely applied in commercial arts for many years.

Whatever is the truth with regard to the chlorine theory, one thing is certain: Wherever we have free oxygen we have a modification of the discolorations following putrefactive change.

Of the Chlorine Salts, the Chlorinated Soda would stand at the head of the list, were it possible to be certain of getting a good article.

The very looseness of its chemical union which makes it desirable to use also makes it unstable as a drug, and much of that in stock is valueless to the dentist. The chlorides of sodium (common salt) potassium, or aluminum, are any, and all available. The last named has been my dependence for several years, and I doubt if there is anything better. Dr. Cushing, who has had good success in this line of work, generally uses Labarraque's solution. Dr. Harlan recommends the salt of aluminum.

CONDITIONS OF SUCCESS IN THE USE OF BLEACHING AGENTS.

First, *isolation* of the tooth from the beginning to the end of the series of operations involved.

The writer in the *American System of Dentistry* lays no emphasis on this point—in fact does not mention it till he comes to describe the application of the bleaching salt, when he says: "The tooth is then invested with the rubber dam and dried."

From this we are led to infer that the excavating, disinfecting, washing, filling of the upper third of the root, etc., may be done without the dam.

I can see no reason for so deferring the application. It is the first step toward making the dentist master of the situation, and he cannot be master without it.

It is a slovenly thing, in my judgment, to attempt any treatment which has to do with the pulp-chamber of a tooth without the protection afforded by the rubber dam. This is a point which cannot be too strongly emphasized in dental teaching.

MECHANICAL REMOVAL.

All discolored tissue in any degree softened should be removed. This often reaches well up into the canal within the root, or far down toward the edge of the crown in incisors, and beneath the cusp or cusps of canines and bicuspids. The mechanical removal of this is often very imperfectly done, as preparatory to either bleaching or filling. If it is not looked for carefully, it will not always be discovered. If not removed it remains as an obstruction to translucency, and also as a source of further discoloration to adjacent tissue. The dental engine, sharp burs, and excavators, adapted to reach every point that needs reaching, must be used till we have the unmistakable sense of touch and sound characteristic of hard tissue.

It is often wise to enlarge with small burs the pulp canals nearly to the apex of the roots. Frequently the dentine is softened to a considerable extent all along their course.

Thorough mechanical treatment is half the battle with a discolored tooth. It simplifies access to the distal points of discoloration, by removing obstructions and opening up the dentinal tubuli. It makes it possible to dry the same with hot air, or the alternate use of hot air and alcohol.

TREATMENT.

First *drying*. This is important, not because water is inimical to the action of the agent we intend to use, but because the moisture is impregnated with organic matter, or the gases of decomposition. It is so much toward cleansing to vaporize this moisture, that the space it occupies may be filled with our remedies. Having cleaned the main channel mechanically and chemically, we wish to continue the process into all the rivulets of infection. Following upon the drying process, we may use an alkaline wash and dry again, or the volatile aqua ammonia (not enough to disturb the patient's olfactories), then chloroform or ether, for the removal of all accessible remains of the fats or other organic matter.

Till now the whole process has been one of cleansing, so far as practicable by instrument, by air and vaporizable liquids.

What further we may attempt is simply a continuance in the same line by means of a gas, which we hope will penetrate deeper into the tissues and reduce the more finely diffused elements of discoloration.

The process is simple enough chemically considered. It consists in decomposing a salt of chlorine by any means which will set free with promptness and energy, *chlorine gas*, in the cavity of the tooth. Before employing this agency, however, the end of the root should have been perfectly sealed by gutta-percha overlaid with a little cement.

Whatever salt is used should then be thoroughly packed into the cavity, and authorities insist that no steel instrument should be used for this operation. A drop of water, or better the peroxide of hydrogen, is added to take up the base of the salt and set free the chlorine.

Dr. Truman has satisfied himself, however, by many experiments, that he can get better results with dilute acetic acid (50 per cent). Some also have used and recommended electrolysis to aid in the rapid decomposition of the salt. With this I have had no experience.

Dr. Truman recommends that the cavity be in some way sealed and left for some hours or days. He also favors repeated operations through several weeks of time, so long as the results are not satisfactory.

I have not had much experience myself in the long perseverance so advised. I have done what I could with from one to three applications and filled the tooth.

It has seemed to me wise also, in agreement with the plan of Dr. Harlan, to fill the tooth as soon as possible after having reached an approximately good color, using a cement a little lighter than the adjoining teeth.

It is my custom to defer the insertion of any metallic filling for several weeks or months, so that a new trial may easily be had if thought best.

In excavating for the final filling as much of the cement should be left as may be consistent with good anchorage.

Since agreeing to write this paper I have had no good opportunity to experiment with anything new on discolored teeth within the mouth. Experiments on teeth out of the mouth gives no fair test of value in this line of work, because conditions are so entirely different. Nevertheless, I have tried several which may be worth a little something for suggestion. It has occurred to me that possibly there might be some virtue in nitrous oxide, if it could be rightly applied, as a drier and bleacher. Accordingly, I attached a piece of rubber tubing to my gas cylinder, and connected with a small glass syringe having a fine point. The gas was turned on sufficiently to make a pretty sharp current, as determined by the flame of a spirit lamp. Then holding the lamp under the barrel at a distance sufficient to heat it moderately, I was enabled to get a continuous fine stream of warm nitrous oxide. This seemed to help considerably in the rapid dissolution of chloride of sodium; and when used alone at the opening of a large pulp canal evidently whitened the surface.

Some modification of this scheme might be easily adopted to use on teeth in the mouth, and the experiment would be harmless if not valuable. Certainly effectual drying could be accomplished if nothing more.

After thoroughly cleansing a molar tooth as I had supposed, I was surprised to find how much color I was able to remove by repeated washings with chloroform, pumping it in with cotton on a stick. This leads me to think that perhaps we have not used this agent so much as we might, possibly with advantage. As you all know, it is a wonderfully penetrating agent as well as a great solvent.

In experiments on teeth in the laboratory I seemed to get as good results with common salt as with the chloride of aluminum.

CROWNS—WHEN AND WHERE SHOULD THEY BE USED?*

BY C. B. ROHLAND, D. D. S., ALTON, ILL.

In bringing this subject before you I shall not take up your time with the history of crown work, interesting as that may be, nor enter into a detailed description of the different kinds of crowns in use. I shall take it for granted that you are all familiar with the literature on this subject, and that you know the different methods in vogue of setting crowns. I propose briefly to consider some of the general principles which should guide us in deciding when and where to use crowns, and when their use is indicated, what kind to select.

This particular class of work, as now practiced, is probably one of the most satisfactory we are called on to perform. A broken-down, unsightly organ, which is frequently worse than useless, is restored to health and its original usefulness. A tooth, which, as far as service or appearances go, has been utterly lost, is called back by this method to take its place among its fellows and resume its interrupted functions. The improvement made, and the service done are so apparent that the dullest patient will appreciate it. Furthermore, crown work has been so simplified by the inventive genius of our brethren, that, as a rule, it is much easier to crown a broken-down tooth than to fill it. For these reasons crowns are now resorted to on the slightest provocation by very many, and natural organs sacrificed, which, with a little effort in a different direction, might have their usefulness prolonged. The injudicious use of any good thing is an evil. The tendency is, when a thing is first proven to be good, to consider it a panacea, and make use of it accordingly. Hence it may be more profitable now to inquire, not how to make crowns nor how to adapt them, but rather when is their use indicated or contra-indicated.

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*Read before the Southern Illinois Dental Society.

The great variety of crowns that are at our command may all be divided into three classes: first, those which band the root, like the so-called Richmond crown; second, those which simply rest on the root, and depend on a pin or dowel to be retained in place, like the old-fashioned wooden pivot tooth, or the more modern Logan crown; and third, the combination of both. The first does not necessarily call for the destruction of the pulp, the two latter classes always do. Now, I make the general proposition that no healthy pulp should be devitalized unless there is absolute necessity for it. Should there a tooth present itself with a healthy pulp and root, and crown badly decayed, the filling of which would not be likely to jeopardize the pulp, this proposition being accepted, it would of course exclude a consideration of all crowns of the two latter classes, and the decision would lie between a crown of the first class or filling. If the conditions, such as position, general health, work to be performed by the tooth, appearance, etc., were such as to render filling impossible or absolutely inadmissible, then, of course, the crown would be indicated. Granting that these conditions did not contra-indicate filling, then the decision would have to rest on which would best preserve the pulp, which best prolong the usefulness of the tooth, the latter largely depending on the former. Now, the healthy condition of the peridental membrane is also vital to the health of the tooth; indeed, it is more important to its continued well being after maturity than even the pulp. The pulp may die and mummify, or be removed, and the tooth scarcely be aware of it. But let there be any irritation of the peridental membrane, its functions are at once impaired. In preparing the tooth for a crown of the first class, the natural crown must be ground down and shaped, involving considerable loss of substance covering the pulp, as well as some laceration of the gums and injury to the neck of the tooth. Fitting and setting the crown also necessitates violently driving up the band to a greater or less distance under the gum and on to the peridental membrane, with the edges more or less smoothly adjusted. Now, I grant that a gold band or collar, reaching just under the margin of the gums, accurately fitted to the neck of the tooth, and dressed down to an impalpable edge, will produced the minimum, and in some favorable cases a scarcely appreciable amount of irritation ; but observation teaches me that the average dental practitioner, in this respect, is no better than I am. He only approximates perfection, more or less nearly, as conditions permit, and this "impalpable edge," in very many cases, is only beautiful theory—on paper. The conditions about the neck of a tooth that has been banded may be said to be nearly always abnormal, a condition that may often go on for an indifinite period without apparent harm ; nevertheless, anything that tends to bring about abnormal conditions should be avoided if possible. Hence I lay down the general principle, that in all posterior teeth, with living, healthy pulps, when the chances are the pulps can be retained, and the crowns restored by filling, preference should be given to filling, even though it involves "plastering" the whole crown over with amalgam. Because by so doing, the tooth and adjacent parts are restored more nearly to their natural relations ; because the gum and peridental membrane are left comparatively undisturbed ; because, I believe that usually the pulp is more likely to die under a crown, and under a mass of oxy-phosphate, than under a filling ; because, should death of the pulp follow, it is easier to remove the filling than the crown for treatment, and because, should the filling after a time fail, crowning is still left as a last resource, and which event, I believe I have prolonged the usefulness of the tooth, by just as much as I have deferred the final crowning.

In the anterior teeth, other conditions may supervene, that will make filling entirely inadmissible, and may even justify the destruction of the pulp. Amalgam is not available in many of these cases, and tedious operations in gold on frail teeth, in frail patients, even if not by frail operators, are barbarisms, exhausting alike to subject and object, and too often finally destructive of the tooth. Still with the phosphates and gutta-percha, even these teeth may, with a little looking after, be often kept comfortable and presentable for a long time.

Appearance is a weighty argument in favor of crowning these conspicuous teeth, but the good of the patient, the conservation of the natural organs, must be weightier considerations, and must be given their due prominence in making up one's final judgment.

It is often a vexed problem to know just which way to decide, but it is a good rule to err, if err one must, on the safe side. Favor the natural crown, and the artificial still remains as a resource. But destroy the natural, and you have played your last card.

The selection of the class of crown to use is much less difficult. For molars, there is nothing so durable as the all metal crown. Gold crowns, which so many consider things of beauty, are to my taste impudent gilded monstrosities, and should not be put where they can offend the eye. They are very beautiful and artistic—on the laboratory bench, very conspicuous, and aggressively inartistic in the mouth. When they are out of sight, of course, this objection does not lie. For bicuspids, when metal is indicated, my own taste is platinum, as being much less conspicuous and more sightly, but, alas, the patient's prejudice often overrides æsthetic considerations. In strong pulpless bicuspid roots, the bite not too close, so as to allow the use of a large strong body of porcelain, I prefer the all porcelain crown of the Logan type, banded when the articulation, shape or condition of root calls for it, but preferably without. I prefer to set these crowns with oxyphosphate. If I succeed in making a close joint between the crown and root, my experience with porcelain inlay work gives me great confidence in its durability. If I cannot make a satisfactory joint, then I prefer banding for its protection at this point.

For the six anterior teeth, I know of no method of crowning that commends itself to my judgment that does not involve the destruction of the pulp. Platinum crowns with porcelain facings baked on them have been devised, as well as gold crowns with porcelain fronts soldered into them. But laying aside the question of the durability and the clumsiness of these high art overcoats, the pulps of incisors which are broken down so much as to need crowning, have already been deprived of so much protective material, that in all probability they will soon be smothered to death anyway under these jackets. In these cases, it is justifiable to depart from the rule, never to destroy a healthy pulp. I endorse this only of course, when it is settled that filling is not admissable, and because I know of no other method that promises like satisfactory results, for the time, labor, and expense involved. The roots then being pulpless and strong, where other considerations do not forbid, my preference again is for the all porcelain crown of the Logan type, because of its superior strength, its appearance, and adaptability. Unless the root is quite strong it is better to band it, because the long leverage, the direction of the force of occlusion, usually tends toward splitting the root. With a close bite and a short crown, I prefer the time-honored plate tooth soldered to a cap and band fitted over the root.

Sometimes it may be advisable to crown several adjoining roots, one of which is so frail as almost to forbid the idea of crowning. Such roots may often be successfully crowned, and their usefulness be very materially prolonged, by soldering the crown of the frail root to the adjoining crown or crowns, and setting them in place together, thus strengthening the weak without very much adding to the burden of the strong.

No rules can be formulated that will apply universally, but the general principle, in brief, that should govern us in deciding either for or against crowns, should be to give the natural crown a chance to do its duty as long as possible, and when the substitute becomes a necessity, to select, so far as may be consistent with the requirements of durability and appearance, that crown which can be adjusted with the least interference with those vital parts on which the root must depend for its continued well being.

TUMORS OF THE PERIDENTAL MEMBRANE.*

BY W. H. WHITSLAR, D.D.S., M.D., YOUNGSTOWN, O.

The topic, "Tumors of the Oral Cavity," has been so ably presented to the profession, during the past year, by Drs. Carl Heitzmann and Frank Abbott, at the Nineteenth Anniversary of the First District Dental Society of the State of New York, January 17, 1888, and Nathan Jacobson, M.D., at the Union Convention of the Fifth, Sixth, Seventh and Eighth District Societies of the State of New York, at Syracuse, N. Y., October 25, 1888, that it is unnecessary to dwell upon tumors in general. I will, therefore, call your attention to a class of tumors that as yet have been given little attention; namely, Tumors of the Peridental Membrane.

True, tumors of the peridental membrane occur more frequently than is supposed, owing to the lack of observation, and the subject having been generally neglected by the dental profession, probably from the obscurity in which such tumors remain.

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*Read at a meeting of the Western Pennsylvania Odontological Society, at Alleghany City, March 12, 1889.

Surrounded by the bony walls of the alveolus, a hiding place is thus found in which a tumor may exist for years and yet remain unknown to the patient; hence the difficulty, and sometimes impossibility of diagnosis—especially if the tumor is between the roots of a tooth.

The diagnosis of such tumors is a question of time, as is its prognosis.

The etiology of tumors of the peridental membrane may be classified under two heads:

First.—Traumatism direct.

Second.—Traumatism indirect, as of the death of the tooth pulp.

These are the exciting causes, and whatever constitutional idiosyncrasies come under the head of causes of tumors in general are equally applicable to tumors of this kind.

Tumors of the peridental membrane have no individual composition. They are composed of the same histological characters, and pursue the same clinical course that tumors in any other part of the body may, except, perhaps, the fact of such strong enclosures predominating, that tumors are limited in their extension and rapidity of growth; however, that depends upon the severity of the disease. "Tumors of parts which are loosely textured and abundantly supplied with blood naturally grow more quickly than tumors which are poorly nourished and confined in narrow spaces."

If the tumor proves itself malignant, rapidity of growth is noticed earlier if located in the lower jaw than in the upper, because in the upper the entire Antrum of Highmore may become involved long before any positive outward indications are apparent. In this period of development the principal sign would be pain in the parts, though it may not be dissimilar to pain from other causes.

Tumors similarly constructed may vary much in their clinical history, but some that are entirely different often have the identical physical signs.

We are, however, largely dependent upon the histological factors that resemble normal tissue—either embryonic or matured—for the distinctions that names afford us. Yet, tumors present such a variety of conditions that it becomes *per force* sometimes necessary to create names for them on account of anatomical situations. Tumors of the peridental membrane signify those of the membrane surrounding the roots of the teeth.

Magitot, in 1860, gave to the profession a monograph upon this subject. He divided tumors of this kind into five classes, as follows:

1. Fibrous.
2. Fibro-plastic.
3. Epithelial.
4. Tumors with Myeloplaxes, *i. e.* multi-nucleated cells.
5. Tumors with Cytoblastions, *i. e.* single nucleus surrounded by protoplasm.

Magitot and Wedl seem to have been the only observers of myeloplaxes and cytoblastions in the normal root-membrane, and it would appear that tumors with such elements contained therein, may have pre-existed before the tumor was formed. Now, Magitot made this classification from eighteen cases that M. Robin collected, and only one was of the Epithelial type—it was cancerous. Thirty years nearly have elapsed since this division was made, and all tumors of the carcinomatous kind are now recognized by pathologists to be of epithelial origin. This proves that it is impossible for true cancer to develop in any derivative of the mesoblastic layer of the blastoderm. Epithelium is developed from the epiblast and hypoblast, whilst the peridental membrane comes from the mesoblast. Epithelial tumors do not arise, however, primarily in the root-membrane, but owe their presence to the contiguity of tissues.

The first and second divisions now remain, and the point of difference between them is of histology, and also of malignancy. The fibrous are tumors consisting of fibrous tissue—chiefly white fibres. The yellow elastic fibres are rare. The cells are few in number, and like those of the normal fibrous tissue. The fibro-plastic forms are the spindle-celled sarcomata, which consist of cells mainly spindle-shaped and fusiform, separated by only a little homogeneous or slightly-fibrillated intercellular substance.

To the fibrous form belong the membrane polypus. It is owing to the hypertrophic conditions of the peridental membrane that polypi occur. Sometimes protuberances of the membrane escape the socket, and appear as small tumors at the margin of the gum, and may be mistaken for proliferations of the gum tissue, and hence go unrecognized. To distinguish between the two, the papillary structure of the gum will decide.

Circumstances may give rise to Neuroma, Angioma, Lymphoma, and Lymphangioma within the membrane, but as yet they have been unnoticed.

These various tumors of the peridental membrane occur in the deeper portions of the alveolus, and are found between the roots of molars and bicuspids.

The symptoms of tumors of the peridental membrane are generally like those of chronic inflammation, and are readily distinguished from acute inflammation, but the difficulty of proper diagnosis is in the obscurity of the disease. We must wait and watch developments.

Treatment: The expectant is the proper course in the first stages, but should indications point toward malignancy, operation should be begun at once, and all vestiges of infiltrated tissue should be removed beyond the line of demarcation of the disease.

The question may be asked, "How may we know that the tumor is malignant?"

"Malignancy is expressed in one or more of three ways: Infiltration of adjacent structures, affection of neighboring lymphatic glands, affections of other organs and tissues. The first of these is, on the whole, the most important, for it is probably never absent, and is, in many instances, the only indication of malignancy." (Butlin.)

Thus, gentlemen, whilst demurring from your wish to write concerning tumors in general, I hope my apology will gain favor through the medium of the observations I have made, and also gleaned from good authorities.

ODONTOMES.

BY J. V. METNITZ, M. D., VIENNA, AUSTRIA.

[Translated from the Oesterreichisch Ungarischen Viertel-Jahrsschrift fur Zahnheilkunde. By Louis Ottofy, D. D. S., Chicago, Illinois.]

(Continued from page 227.)

II.

For the following report of a case, its history and a description of the malformation, I am indebted to Dr. Mühlböck of Villach.

N, a watchmaker, 60 years old, decreased from normal weight, and whose mouth was almost entirely devoid of sound teeth, had frequently suffered from pericementitis and alveolar abscesses affecting a number of roots. Recently the patient has complained of a painful swelling of the superior maxilla.

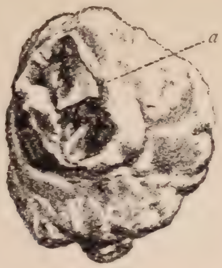

Fig. 7.

Upon examination Dr. Mühlböck found a slight swelling, cor responding with the usual location of the second molar. The gum extended almost to the masticating surface, in fact the latter was almost covered by the gums. It was believed that the lesion was due to the presence of an inflammation of some broken abraded remnants of the second molar.

The presence of a steady discharge of pus, and marked mobility of the supposed root led Dr. Mühlböck to attempt to extract it. As any of his forceps refused to firmly grasp it, he resorted to a pair of sharp watchmaker's pliers, with a successful result.

To his astonishment a large portion of the bone also moved during the attempt of extraction ; this, however, did not deter the operator from completing the operation, cautiously. The operation

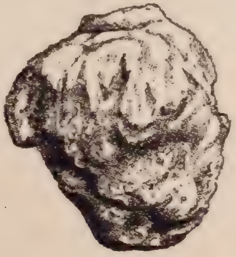

Fig. 8.

was followed by a copious hæmorrhage. The most marked result, however, was the inability of the patient to speak plainly. Upon introduction of a carbolized dressing into the wound the patient the was again enabled to speak distinctly.

Undoubtedly the growth must have involved the antrum as well as the nasal passage ; the discharge from the nose, which was quite fœtid and contained pus, seemed to indicate this condition quite plainly. A complete cure was effected at the end of three weeks.

The growth involving the tooth has a longitudinal diameter of 27 millimeters, the larger transverse diameter measures 25 and the smaller 21 millimeters. The weight of the dried mass is 10.7 grams. In color it is bright yellow and luminous.

When the hard dense surface is tapped with a piece of steel a high bright tone is emitted, which is like the sound heard when a tooth is tapped, but unlike that emitted by bone.

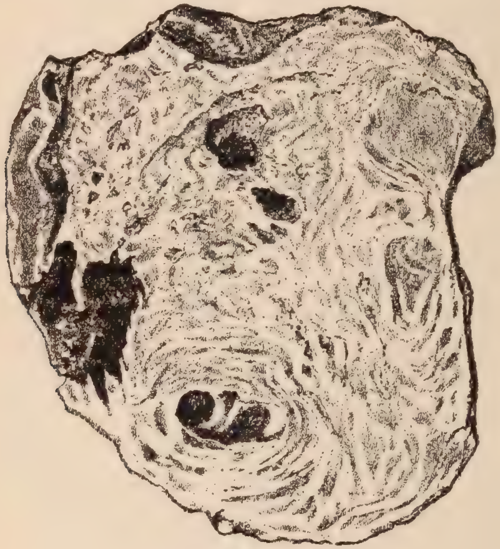

Fig 9.

On the masticating surface of the quite irregular bony formation shown in Fig. 7, a three-cornered, highly polished, slightly concave facette, *a*, is visible. It was evidently caused by contact with the lower jaw during mastication. On each side of it the surface presents two depressions ; these are irregular in shape and the result of caries. From this point, which corresponds with the coronal surface of the tooth, the growth becomes wider, until it reaches the extensive diameters mentioned, it then slowly diminishes in width as the portion corresponding with the roots of the tooth is reached. (Fig. 8.)

In that portion corresponding with the roots, the surface presents two orifices, whose margins are ragged and overhanging. These served as channels for the vessels which supplied the growth with nourishment. The mass was separated with the saw with so much difficulty, that the preparation of cross sections, especially of thin ones, was difficult. In the polished cross section shown in Fig. 9, we see a mass consisting of very dense bone, perforated by several canals. In the central portions the mass seems homogenous, enclosing single, irregular, hollow spaces. In the periphery of that portion corresponding with the roots, the mass seems to be arranged in concentrated lamellæ, which either encircle a space, or are circular without so doing.

The irregular canals which enter the mass on its external surface, can be traced into the innermost parts of the growth.

Well formed dentine can be found in the coronal portion of the tooth. Especially in the concave, hollowed out horizontal, polished portion, corresponding with the facette on the masticating surface previously described.

A microscopical examination, presents above all, bone resembling tissues, with bone cells of very irregular shape. (Fig. 10). In many parts of the section, the latter can hardly be distinguished from interglobular spaces; hence, we are justified in speaking of partially formed dentine.

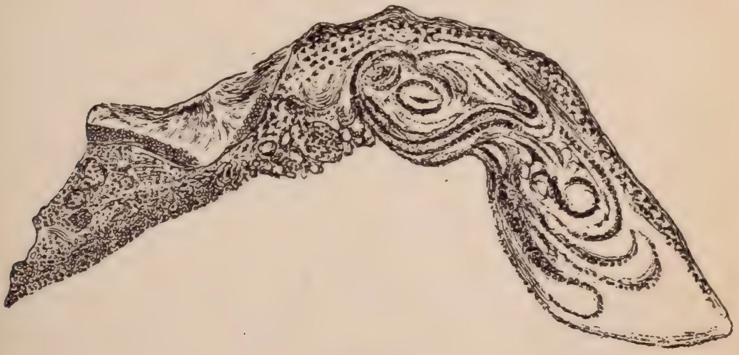

Fig. 10.

The entire mass is interrupted by numerous collections of dentine globules; in many places these surround hollow spaces, of varying diameters, which are undoubtedly portions of the pulp cavity.

The canals which enter the mass, are in many places in their course, irregularly enlarged, and this is a marked sign of rapidly advancing resorption. That portion of the well developed dentine which can be recognized with the naked eye, and which covers the three-cornered polished facette previously described, (the latter being the result of attrition) is much denser.

That portion of the dentine facing the mass is broken up into collections of numerous dentine globules. The well developed cementum, which surrounds the formation almost wholly, also covers the dentine, and shows distinctly marked bone cells.

[TO BE CONTINUED.]

TOBACCO.

BY E. J. COX, M. D., DAYTON, O.

One seldom reads of any one writing favorably about the use of tobacco, it is almost always in regard to its abuse, and many write condemning it and those who use it in any form. Picking up the *North Western Lancet* of March 1st we find the following:

> Dr. Vicenzo Tassinari, assistant at the hygienic institute of the university of Pisa, publishes some interesting experiments with tobacco smoke on various pathogenic and non-pathogenic organisms. The duration of the fumigations varied from thirty to thirty-five minutes, and the quantity of tobacco consumed amounted to from 3½ to 4½ grammes. It was shown that tobacco smoke possesses the property of retarding the development of some pathogenic bacteria and preventing the growth of others. Thus the smoke from a large Virginia cigar retarded the development of the bacterium prodigiosum for 72 hours, of the staphylococcus aureus for 73 hours, and of the anthrax bacillus for 97 hours. No development of colonies of the spirillæ of Asiatic cholera and anthrax, and of the bacilli of typhus and pneumonia was observed after from 128 to 168 hours. The author regards these results as due to the chemical action of the ingredients of tobacco-smoke.—*International Journal of Surgery.*

Reading carefully the above it seems that many of the theories advanced by some as regards the injury tobacco causes, must certainly be exploded. That the moderate use of tobacco in its various form, smoking, chewing, or the use of snuff (on the brush), is a positive benefit to the teeth, is, in my estimation, a fact that cannot be controverted; nevertheless much is written against its use. For the past fifteen years a partial record has been kept of many cases and there has yet to appear a case that has not received marked benefit from its use where it has been prescribed. Many may wonder why the subject has not been brought up for discussion. Once the anti-tobacco man of a dental journal crossed swords with a tobacco apostle, the result we all know; but notwithstanding all the anti-tobacco man writes, we defy him to bring us any whose teeth are firmer, stronger, and more healthy than one who uses tobacco. It is nearly twenty years ago since, sitting in the corner, the old preceptor said to a patient in his chair: "Miss Emma, your teeth are white and very beautiful, and the decay is what is known as soft decay; if you wish to save them use Scotch snuff twice a day and I think that will do more good than anything else." Did she do it? Yes. What is the result? She has lost but one tooth, although she married shortly after and has a family now of six children. Her brother, two years younger, was told to smoke or chew a little tobacco. He did not do so. For seven years he has worn artificial teeth. Yet which of the two, under these circumstances would be likely to lose their teeth first? Some may ask: Did she keep on using snuff? She did. Others again: Were the teeth, decay, and conditions alike? As near as possible. Do you believe, had the brother used tobacco, his teeth would have remained as his sister's? Most firmly we do.

Let us stop and look the issue squarely in the face; let us look at the foreigners who come to this country: the Irish, English, Swedes or French, it makes little difference which; did any ever see more magnificent teeth. Now, *why* is it that after they have been in this country ten years, so few of the women have any of their own beautiful teeth left; yet in 95 per cent the men have never consulted a dentist in their lives, and they and toothache are strangers; and we doubt if five per cent ever have occasion to visit us, unless it is to have a loose tooth extracted. Now, there must be some reason for this. We attribute it to the fact that 95 per cent of those men smoke—where they do not, they lose their teeth just as the women do.

Who has not seen this? Careful investigation will prove conclusively that what is said here is a fact. Take it in my own case. Seventeen years ago my old preceptor said: "I must look over your teeth; you have been here a long time and it may be necessary." Well, he did one day and said, "You have a good set of teeth and it will help them if you use a little tobacco. You have two or three that need attention. I will attend to them some day." Alas! the some day never came, for he died and my teeth remained as they were. Did we use tobacco? We did. And what of the teeth? They are just as they were seventeen years ago; so far we have not heard from them. "Some day," when we have time, some one will fill them.

This is not hearsay nor foolishness, *this is a fact*. If tobacco has not saved these teeth, what has? Now, how do we account for this? There is but one theory: what action does tobacco have, acid or alkali? beyond a doubt the latter. Then, if the saliva is acid, what does it do? Neutralizes it and the teeth never suffer from an acid reaction of the saliva. This is the only explanation we have to offer. Thereto might be added perhaps this theory, that tobacco destroys bacteria in the oral cavity and prevents their development, thus keeping the teeth in as good a condition as possible. Who among us have not noticed the cleanliness of the mouth and teeth of a confirmed tobacco chewer—if he uses it in moderation? They have certainly the purest breath.

Case after case might be recited here, and it could be demonstrated beyond a doubt, what good arises from the moderate use of the weed. Tobacco, like whisky, wine and beer, is a good thing in its place—use but don't abuse it, and you can obtain, we trust, good results therefrom.

CHICAGO DENTAL SOCIETY.

PROGRAMME OF SCIENTIFIC WORK, FOR THE YEAR 1889-1890.

1889.

May. E. L. Clifford—Preparation of Root Canals for filling at one sitting. W. A. Stevens—Facial Neuralgia.

June. C. R. Baker—Metals. J. J. Whaley—Bridge-work.

July. C. F. Hartt—Pluggers and Malleting. G. S. Salomon—Electricity in the Dental Office.

October. E. L. Graves—Capping Pulps. J. O. Ely—Experiments and their results in the Treatment of Pyorrhœa Alveolaris, and Capping Pulps.

November. D. M. Cattell—Anomalies of Pulp Canals. L. L. Davis—Histology and Microscopy.

December. D. B. Freeman—The Effects of Eruptive Diseases on the Teeth. J. E. Hinkins—Treatment of Deciduous Teeth.

1890.

January. E. A. Royce—Putrefaction. P. J. Kester—Pus.

February. J. N. Crouse—Service and Compensation. Louis Ottofy—Veterinary Dentistry.

March. J. E. Keefe—Anæsthetics. O. E. Seeglitz—Carbolic Acid.

April. G. V. Black—Shock.

(Annual meeting.)

THE IOWA STATE DENTAL SOCIETY elected the following officers for the ensuing year: President, Dr. F. M. Shriver, of Glenwood; Vice-President, F. R. Ross, of Cedar Rapids; Secretary, G. W. Miller, of Des Moines; Treasurer, W. H. Deford, of Anamosa.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.
PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M.D., D.D.S.,

ASSOCIATE EDITORS:
J. W. WASSALL, M.D., D.D.S. — J. G. REID, D.D.S.
LOUIS OTTOFY, D.D.S. — L. L. DAVIS, D.D.S.

AMERICAN DENTAL ASSOCIATION.

The above association will meet at Saratoga Springs the first Tuesday of August, 1889. For the past two years every committee or section has made a report in regular order, and we hope this year the record will not be broken. Chairmen of sections who have not already gone to work should awaken to the fact that less than three months from now the association will assemble, and that the profession are awaiting the results of their labors during the past year.

INTERNATIONAL DENTAL CONGRESS.

Perhaps no dental journal published in the United States views with so much just pride the present favorable outlook for a profitable dental meeting at Paris, France, this year as does the DENTAL REVIEW. This feeling of satisfaction is wholly justified when the history of the movement in the United States is known.

It is true that before the great meeting of medical men in Washington in 1887, the calling of an International Dental Congress had been proposed, that active steps had been taken to organize such a body, and that further steps in the matter had been postponed in deference to the great congress about to meet at Washington. Unfortunately, the DENTAL REVIEW was born just at the time when the greatest dissension in regard to medical recognition existed; when the question of professional dependence on, or independence of the medical profession was most warmly discussed.

Those who professed to know even went so far as to state that the DENTAL REVIEW was established for the special purpose of defeating the dental section of the International Medical Congress. The Dental Review did then, as it does now, believe that a properly organized and well-conducted congress, composed exclusively of dentists, would prove most beneficial to dentistry as a profession. In the interests of harmony, and with a view to do only that which would secure unity, it temporarily waived its opinion and gave its hearty support, as a journal, as well as the individual and personal support of its editorial staff, to the then forthcoming dental section of a medical congress. In the meanwhile the Frenchmen were planning to organize a dental congress, which, it was contemplated, should meet at the time of the Universal Exposition of 1889. As soon as this proposition was made known and the Medical Congress had adjourned, the Dental Review heartily supported the International Dental Congress of 1889. No less a publication than *The Journal of the American Medical Association* made known its most emphatic opposition to the proposed plan. The Dental Review was taunted with a desire to thwart and oppose a dental section which it was supposed would be organized in 1890—a matter not as yet decided. The reply made to the various imputations in the May, 1888, number of the Dental Review has completely silenced medical journalistic opposition. In the number referred to an invitation was extended to American dental journals to express their opinions in regard to an International Dental Congress. We confess that we were surprised at the indifference and opposition manifested by *dental* journals. The ties of personal friendships seemed to be powerful barriers to a free expression and the good of the profession was clouded. We think of and can remember only one dental journal which gave the movement any support, all others either entirely ignored the matter or opposed it. We do not know what has led to the change of heart ; we would not dare to impute that any of our most esteemed contemporaries were waiting to see which way the wind would blow. Whatever the reason may be, it is a fact that most dental journals to-day, if not in sympathy with an International Dental Congress, are not opposed to it.

It is idle to pretend now that the meeting is in any way antagonistic to any proposed subsequent assemblage. International congresses of Hygiene, Dermatology, Syphilography, Otology, Therapeutics, Materia Medica, Hydrology, Climatology, Ophthalmology, and Demography will be among those held which are medical in character, yet none of these are accused of being held in opposition to their respective sections in other societies or congresses.

All indications now point to a successful meeting, and the activity among Americans is beyond our expectations; a large number will no doubt cross the Atlantic for this purpose. All that now remains to be done, principally, consists in the preparation and transmission of original communications, in order that the United States may be represented in the scientific arena in a manner befitting the standing of the profession in America. Not only is it necessary and important when viewed from that standpoint, but it is also essential that a good impression should be made by Americans, especially by Western men, because an attempt will be made to secure the second International Dental Congress for the Auditorium Building, Chicago, September 1, 1892.

NEDDEN'S CRYSTAL GOLD.

Last year we published an article from the pen of M. Schleuker of St. Gallen, Switzerland, describing a crystal gold, which is prepared by the widow of the inventor and by a secret process. We have secured some of this gold, and while we have not even entirely complied with the recommendations as to its manipulation, we are certainly surprised at some of the peculiarities of this preparation. After it has received more thorough trials we will relate our experiences with it to the readers of the DENTAL REVIEW.

"CONSISTENCY, THOU ART," ETC., ETC.

The position occupied by the dentist to-day is phenomenal. He is eyther a dentist nor neyther a physician; he is eyther or neyther, ayther or nayther, just as it happens to strike the fancy of the medical writer. If he has committed a fault which would degrade the physician, then our friend is designated as "that man, the dentist." If "that man" can help to make a medical meeting successful, if he is likely to turn out in large numbers—as he always does—to a medical meeting, in which perchance he may make the biggest section, then he is designated as "Dr. So-and-so, a medical man, a member of one of our specialties." Ye poor descendants of Joseph Lemaire, no place of rest for you!

In reporting a case of death from chloroform in a dentist's chair, *The Journal of the American Medical Association* refers to the probability of a dentist having administered the chloroform. What of it? Is not the dentist a physician as per the action of the Association of which *The Journal* is the official organ? Does not there seem to be some inconsistency somewhere? Are we dentists and should we not administer anæsthetics, or are we physicians, medical men, enjoying the same privileges? Which? Are we eyther, neyther, ayther or nayther?

A New Dental Society.

The Post-Graduate Dental Association of the United States, was organized by the class in attendance at the Chicago College of Dental Surgery, during the month of April. The society adopted a constitution and by-laws, and elected the following officers: President, John M. Gallehugh, Chenoa, Ill.; Vice President, R. B. Tuller, Chicago; Treasurer, Hamlin Barnes, Wellsville, Ohio; Secretary, Chas. W. Crawford, Spencer, Iowa.

In a private letter received from the Vice President, Dr. R. B. Tuller, the objects of the organization are stated as follows: The advancement of dental science. To encourage study among non-graduates, and promote more harmonious relations between dentists of the above class and colleges. The society hopes to grow by accessions from the ranks of other post-graduates from reputable dental colleges. It is not intended to be a local organization. Membership may be acquired by presenting a certificate of attendence on a practitioner's course in a reputable dental college. About thirty of the class joined the association. We wish it a long and honorable career.

Dental Congress.

The committee having in charge the solicitation of papers for the congress, have selected the following among other subjects, on which papers will be read:

Sec. 1. Anatomy and Physiology, Normal and Pathological.—1. The teeth according to races. 2. The role of micro-organisms in dental and buccal pathogeny. 3. The influence of nutrition on the production or arrest of dental caries. 4. Classification of dental and buccal terminology.

Sec. 2. Operative Dentistry and Therapeutics.—1. Treatment of teeth with exposed and dead pulps. 2. Comparative value of gold and plastics for filling teeth, with an exposé of all the new and recent methods before the profession. 3. Local anæsthesia.

SEC. 3. PROSTHESIS AND DENTAL ORTHOPEDY.—1. The indications for and processes of making crowns and bridge-work. 2. Methods of correcting irregularities of the teeth, (age, conditions, etc.,) with all the newer systems. 3. Choice of substances for constructing artificial dentures, full and partial sets. 4. Restoration of the face and jaws by artificial appliances.

SEC. 3. DEONTOLOGY AND HYGIENE.—1. Dental education, methods and duration of studies. 2. Dental and buccal hygiene during the period of dentition. Other subjects will be brought up for discussion.

Any gentleman desiring to present a communication to the congress will kindly inform the editor, giving title of the paper, its probable length, and a short resumé of the same, to be forwarded to the secretary of the congress, M. Pourchet, 24 Rue de la Chaussèe d' Antin, Paris, France.

DOMESTIC CORRESPONDENCE.

ÆSTHETIC FILLINGS.

To the Editor of the Dental Review:

DEAR SIR:—We great American dentists are (in our minds) the best dentists in the world. Are we the most artistic? Our patients believe in us as faithfully as in their ministers, and we have taught them to submit to, if not to admire, gold as a tooth decoration. Indeed there be some so infatuated as to demand that "the gold must show." This golden display has become so common in America that to-day artificial substitutes have gold fillings in conspicuous places to make them look "natural," and the happy possessors of perfect natural organs, unembellished auriferously, are accused of having "false teeth."

A foreign lady called on me recently to have her teeth cleansed. I pointed out some teeth which needed to be filled.

"Ah," said she, "I know, but I must wait till I return to Italy. I do not like your American methods. All your women are disfigured with gold."

"I see," said I, "that you have had white fillings, which are but temporary; gold is more permanent."

"Ah ha!" she replied with vivacity, "That is it. The gold is permanent. That is my objection. I should prefer to be *temporarily* beautiful than *permanently* ugly."

Her epigrammatic language deeply impressed me, and is now frequently quoted among my professional friends. I filled her teeth with phosphates, taking special pains to obtain good results as to color, and she has promised to send me a number of her friends, who "supposed those beautiful white fillings were not made in America."

This, it seems to me, is the riddle of to-day, which we "great American dentists" must solve or admit that we are not artists. The gold in front teeth is (sometimes) durable, but it is hideous; the phosphates and the gutta-percha are better to look at but do not endure. What then shall we do? My reader is saying "Porcelain." But has my reader investigated that promising system? I have, to some extent, and I am a doubting Thomas. If the American dentists are so great, surely some of them must reside in New York city, the metropolis of the western world. How is it that they cannot get the grand results, the echoes of which reach us from your neighborhood? How is it that the western gentlemen who have come east this winter to teach us have failed to convince us? Is our climate or physical position on this globe such that porcelain fillings cannot be well done here by the same men who do so well in another longitude? Or is it that the smoke from your great factories, which has so disfigured all your buildings, has also dimmed your eyesight so that you cannot see color shades as well as we do on the Atlantic coast? Color, that is the key note. If not for color, what need have we of porcelain fillings? So far as permanency is concerned it is surely no better than the phosphates which cement it into place. Any mechanic will tell you that nothing is stronger than its weakest point. But when I said color to a porcelain filling advocate, he smiled in a lofty pitying way and showed me some *yellow* fillings in *blue-white* teeth, and his confidence in the matching of the shades made me wonder if the western smoke was still in his eyes, giving a grey tint to the yellow, as were he to look through smoked glasses.

One of our eastern men exhibited at one of our clinics, a number of fillings of porcelain which had been placed in his own mouth. They were all in his lower teeth, the upper ones having been preserved (and disfigured) by immense gold contours, beautifully done. He seemed to be a convert, and was loud in his praise. Nevertheless, many present said, "This work in your mouth condemns the system, if this is the best result attainable." And they were right, for there was little choice as to conspicuousness, between them and the gold. I ventured to say the fillings would be lost by the dissolution of the cement, which could be plainly seen around each filling. "I have," said the gentleman, "a phosphate which is not soluble in the saliva."

"Then," said I, "You can cry eureka, for with such a material the need of porcelain fillings vanishes."

I have but a word to say about this matter of color. We are told, "mix the bodies together in given proportions, and bake sample pieces. Match the tooth color with one of these samples, and use the indicated mixture for the filling." Nothing could be simpler. So we purchase an outfit and proceed. We find among our samples a good match for the tooth, and follow directions implicitly, and get a *totally different shade*. Why? Tell me this. Ash & Co., and the S. S. White Co. get up rings of sample colors of their teeth. Why is it that in one-half the cases we cannot find in their stock an exact match for the color we want after selecting a sample? The harm is that teeth are baked at a white heat which cannot be measured, and with identically the same combination of bodies, various results are reached, each degree of heat giving us a different shade.

What we want, what we must have, is a cement which will not wash out, and which can be mixed for any color. Who will work out this problem? Where are our chemists? Or are we only mechanics? We, the greatest dentists in the world!

In closing, let me give you a poem recited at an alumni dinner which I had the honor of attending recently. Its author is a prominent New York physician, and the parody is the most excellent one I have seen, and interesting to us because of the medical flavor to the lines:

THE OLD OAKEN BUCKET.

[Revised and edited by a "Sanatarian."]

J. C. BAYLES, M. D.

"With what anguish of mind I remember my childhood,
Recalled in the light of a knowledge since gained;
The malarious farm, the wet, fungus-grown wild-wood;
The chills then contracted that since have remained;
The scum-covered duck pond, the pig-sty close by it—
The ditch where the sour-smelling house drainage fell;

The damp shaded dwelling, the foul barn-yard nigh it—
But worse than all else was that terrible well;
And the old oaken bucket, the mould-crusted bucket,
The moss-covered bucket that hung in the well.

Just think of it! *Moss* on the vessel that lifted
The water I drank in the days called to mind,
Ere I knew what professors and scientists gifted
In the water of wells by analysis find.
The rotting wood fibre, the oxide of iron,
The algae, the frog of unusual size,
The water, impure as the verses of Byron,
Are things I remember with tears in my eyes.
And to tell the sad truth—though I shudder to think it—
I considered that water uncommonly clear,
And often at noon when I went there to drink it,
I enjoyed it as much as I now enjoy beer.
How ardent I seized it with hands that were grimy,
And quick to the mud-covered bottom it fell;
Then reeking with nitrates and nitrites, and slimy
With matter organic, it rose from the well.

Oh! had I but realized, in time to avoid them,
The dangers that lurked in that pestilent draught,
I'd have tested the organic germs, and destroyed them
With potassic permanganate ere I had quaffed;
Or, perchance, I'd have boiled it, and afterwards strained it
Through filters of charcoal and gravel combined;
Or, after distilling, condensed and regained it,
In potable form, with its filth left behind.
How little I knew of the dread typhoid fever
Which lurked in the water I ventured to drink;
But since I've become a devoted believer
In the teachings of science, I shudder to think.
And now far removed from the scenes I'm describing,
The story for warning to others I tell,
As memory reverts to my early imbibing,
And I gag at the thought of that horrible well,
And the old oaken bucket, the fungus-grown bucket,
In fact, the slop bucket—that hung in the well."

Yours truly, RODRIGUES OTTOLENGUI.

NEW YORK, 115 Madison Avenue, April 4, 1889.

DENTAL LAW OF THE STATE OF MINNESOTA.

MY DEAR DR. HARLAN: MINNEAPOLIS, Minn., April 23d, 1889.

This Bill has just passed both houses of our Legislature. It requires, as you see, that *younger* men obtain a diploma from a reputable dental college, and it also requires of said diploma-holder that he shall give evidence by an examination, both, *practical upon patients*, and theoretical, of having received proper education of hand and mind from such dental college.

It is double acting, both upholding and restraining the dental colleges by putting a premium on worthily earned dental degrees, and refusing to accept diplomas from those who have acquired them without merit. Very truly yours,

J. H. MARTINDALE.

SUBSTITUTE FOR H. F. 197.

BY SPECIAL COMMITTEE ON DENTAL LAWS.

A Bill for an Act to Regulate the Practice of Dentistry in the State of Minnesota.

Be it enacted by the Legislature of the State of Minnesota.

SEC 1. *From and after September 1, 1889*, it shall be unlawful for any person to practice dentistry in this State, unless he shall first have obtained a certificate of registration thereto, and filed the same or a certified copy thereof with the clerk of the district court of the county of his residence, all as herein provided.

SEC. 2. A board of examiners to consist of five resident practicing dentists is hereby created, whose duty it shall be to carry out the purposes and enforce the provisions of this Act. The members of the first board under the provisions of this Act shall consist of the members of the present board of dental examiners, existing under chapter 199 of the General Laws of 1885, who shall hold their offices as members of such new board for the term for which they were appointed under said former act, and until their successors are duly appointed. All vacancies in said board shall be filled by appointment by the Governor as hereinafter provided. The term for which members of said board shall be appointed shall be three years, and until their successors shall be duly appointed. It is also hereby provided that no person shall serve to exceed two terms in succession. In case of any vacancy occurring in said board in the term of any member of said board, such vacancy shall be filled for such unexpired term by the Governor from names to be presented to him within two months of the occurrence of such vacancy by the Minnesota State Dental Association in the same manner as hereinafter provided. It shall be the duty of said Minnesota State Dental Association after September 1, 1889, annually prior to August 10th to present to the Governor the names of twice as many practicing dentists resident in this State as there are regular members to be appointed of said board prior to September 1st, in the following year. All appointments by the Governor shall be made within twenty days of the submission of such names to him, and if such names shall not be submitted to him within the allotted time, he shall make his appointments within twenty days from the expiration of the time allotted for such presentation of names from among the resident practicing dentists. Provided, That nothing in this act shall prevent the appointment of two members of said board from among the resident practicing dentists not members of said Minnesota State Dental Association, if the Governor shall so elect.

SEC. 3. Said board shall choose at its first regular meeting, annually, one of its members president and one secretary thereof, who severally shall have the power during their term of office to administer oaths and take affidavits, certifying thereto under their hand and the seal of the said board. And after September 1, 1889, said board shall meet regularly at least twice in each year, to wit: On the first Tuesday in April and October, and at such other times as may be deemed necessary by the board. Such meetings shall be held *at the medical department of the University of the State* of Minnesota. A majority of said board shall at all times constitute a quorum and the proceedings thereof shall at all reasonable times be open to public inspection. And it is furthermore provided, that in the event of any member of said board absenting himself from two of its regular meetings consecutively, the board shall declare a vacancy to exist, which vacancy shall be filled by the means hereinbefore provided.

SEC. 4. It shall be the duty of the first board hereinbefore provided for to meet at the city of Duluth in said State on the second Tuesday in July, 1889, and elect officers, and within ten days thereafter to transfer to a register to be provided by them for that purpose, the name, residence and place of business of each and every person who on the second Wednesday in July, 1889, and pursuant to an act of the legislature of the State of Minnesota, approved March 3, 1885, shall be qualified to practice dentistry in the State of Minnesota, and who shall then be duly registered on the books of the board created by said act of March 3, 1885. No certificates of license to practice dentistry shall be issued after the second Wednesday in July, 1889, under said act of March 3, 1885. It shall be the duty of the said secretary of the first board hereby created to send to each person so registered prior to August 5, 1889, a certificate of his enregistration signed by the president and secretary of such board of examiners.

Sec. 5. Any person or persons who shall desire to begin the practice of dentistry in the State of Minnesota on and after September 1, 1889, shall file his name, together with an application for examination, with the secretary of the State Board of Dental Examiners, and at the time of making such application shall pay to the secretary of said board a fee of ten dollars, and shall present himself at the first regular meeting thereafter of said board to undergo examination before that body. In order to be eligible for such examination such person shall present to said board his diploma from some dental college in good standing, and shall give satisfactory evidence of his rightful possession of the same, provided also that the board may in its discretion admit to examination such other persons as shall give satisfactory evidence of having been engaged in the practice of dentistry ten years prior to the date of passage of this act. Said board shall have the power to determine the good standing of any college or colleges from which such diplomas may have been granted. The examinations shall be elementary and practical in character, but sufficiently thorough to test the fitness of the candidate to practice dentistry. It shall include, written in the English language, questions on the following subjects: Anatomy, physiology, chemistry, materia medica, therapeutics, metallurgy, histology, pathology, operative and surgical dentistry, mechanical dentistry, and also demonstrations of their skill in operative and mechanical dentistry. All persons successfully passing such examinations shall be registered as licensed dentists in the board register provided for in section 4, and also receive a certificate of such enregistration, said certificate to be signed by the president and secretary of the board. The examination fee shall in no case be refunded.

Sec. 6. Recipients of said certificate of enregistration shall present the same for record to the clerk of the district court of the county in which they reside, and shall pay a fee of fifty cents to said clerk for the registration of the same. Said clerk shall record said certificate in a book to be provided by him for that purpose. Any person so licensed removing his residence from one county to another in this State, before engaging in the practice of dentistry in such other county, shall obtain from the clerk of the district court of the county in which said certificate of registration is recorded a certified copy of such record, or else obtain a new certificate of registration from the board of examiners, and shall, before commencing practice in such county, file the same for record with the clerk of the court of the county to which he removes, and pay the clerk for recording the same the fee of fifty cents. Any failure, neglect or refusal on the part of any person holding such certificate or copy of record to file the same for record as hereinbefore provided, for six months from the issuance thereof, shall forfeit the same. Such board shall be entitled to a fee of one dollar for the reissue of any certificate, and the clerk of the district court for any county shall be entitled to a fee of one dollar for making and certifying a copy of the record of any such certificate.

SEC. 7. All persons shall be said to be practicing dentistry within the meaning of this act who shall for a fee or salary, or other reward paid either to himself or to another person for operations or parts of operations of any kind treat diseases or lesions of the human teeth or jaws or correct malpositions thereof. But nothing in this act contained shall be taken to apply to acts of bona fide students of dentistry done in the pursuit of clinical advantages under the direct supervision of a preceptor or a licensed dentist in this State, during the period of their *enrollment in a dental college* and attendance upon a regular UNINTERRUPTED course in such college.

SEC. 8. Out of the funds coming into the possession of the board, the members of said board may receive, as compensation, the sum of five dollars for each day actually engaged in the duties of their office, and mileage at three cents per mile for all distance necessarily traveled in going to and coming from meetings of the board. Said expenses shall be paid from the fees and assessments received by the board under the provisions of this act, and no part of the salary or other expenses of the board shall ever be paid out of the State treasury. All moneys received in excess of said per diem allowance and mileage as above provided for shall be held by the secretary of said board as special fund for meeting expenses of said board and carrying out the provisions of this act, he giving such bond as the board shall from time to time direct. And said board shall make an annual report of its proceedings to the governor by the 15th of December of each year, which report shall contain an account of all moneys received and disbursed by them pursuant to this act.

SEC. 9. Any person who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction may be fined not less than twenty dollars nor more than one hundred dollars, or to be confined not less than one month nor more than three months in the county jail, or both. And all fines thus received shall be paid into the common school fund of the county in which such conviction takes place.

SEC. 10. Any person who shall knowingly or falsely claim or pretend to have or hold a certificate of enregistration, diploma or degree granted by a society or by said board, or who shall falsely and with the intent to deceive the public, claim or pretend to be a graduate from any incorporated dental college, not being such graduate shall be deemed guilty of a misdemeanor, and shall be liable to the penalties provided in section nine of this act.

SEC. 11. Justices of the peace and the respective Municipal courts shall have jurisdiction over violations of this act. It shall be the duty of the respective county attorneys to prosecute all violations of this act.

SEC. 12. Any person who shall be licensed under the provisions of this act, and who shall practice dentistry under a false name with intent to deceive the public shall be liable to have said license revoked upon twenty days' notice of such proposed revocation, and of the time and place of considering such revocation by order of the State Board of Dental Examiners. And any person, who, after revocation of his license shall continue to practice dentistry in the State of Minnesota shall be deemed guilty of a violation of the provisions of this act and shall be subject to the penalties provided therein. Nor shall a certificate to a person under one name be any defense to an action brought against him for practicing without a certificate under another, unless it be shown that such practice under such other name was done without intent to defraud or deceive.

SEC. 13. Every registered dentist shall in each and every year after 1889 pay to said Board of Examiners the sum of one dollar as a license fee for such year. Such payment shall be made prior to May 1 in each and every year, and in case of default in such payment by any person, his certificate may be revoked by the Board of Examiners upon twenty days' notice of the time and place of considering such revocation. But no license shall be revoked for such non-payment if the person so notified shall pay before or at such consideration his fee and such penalty as may be imposed by said Board, provided that said Board may impose a penalty of five dollars and no more on any one so notified as a condition of allowing his license to stand. Provided further that said Board of Examiners, may collect any such dues by suit.

SEC. 14. The board of examiners created by this act may sue or be sued, and in all actions brought by or against it, it shall be made a party under the name of the Board of Dental Examiners of the State of Minnesota. And no suit shall abate by reason of any change in the membership of said board.

SEC. 15. Chapter 199 of the general laws of 1885, being an act entitled "An act to insure the better education of the practitioners of dental surgery, and to regulate the practice of dentistry in the State of Minnesota," approved March 3d, 1885, is hereby repealed, such repeal to take effect September 1st, 1889.

SEC. 16. All effects and property whatsoever of the board of dental examiners created by said act of March 3d, 1885, shall on said first day of September, 1889, be and become the property of the board of examiners created by this act, and said board hereby created is hereby declared to be the legal successor of the board created by said act of March 3d, 1885.

SEC. 17. This act shall take effect and be in force from and after its passage.

ELECTRO METALLIC PLATES.

To the Editor of the Dental Review:

DEAR SIR :—The reply of Durand & Co. to my criticism of these plates shoots away over the mark, and the *vital* point is not referred to, viz. : That owing to their granular structure they will be very likely to break where there is any strain upon them, as is often the case with partial sets; and when once broken they cannot be repaired, for the reason that they must not be heated "even to a red heat." So also when a tooth or clasp is broken off, and this will often occur from the manner in which they are attached to the plate.

This being the case the plate, when broken, is worthless, and the patient must pay for a new one.

My statement that the plates were made of two layers of silver and one of gold any one could see, by reading the whole sentence, was either a slip of the pen or a typographical error.

Yes, the plates are "very beautiful," but as some one remarked about another matter, "like the devil's tail, painted blue, more ornamental than useful." Yours respectfully,

L. P. HASKELL.

Chicago, April, 1889.

REVIEWS AND ABSTRACTS.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION at the twenty-eighth annual session, held at Louisville, Ky., in joint session with the Southern Dental Association, commencing on the 28th of August, 1888. Geo. H. Cushing, Recording Secretary. Published for the Association by the S. S. White Dental Manufacturing Co., Philadelphia.

This publication has come to be looked forward to each year as embodying the best thought of the profession, and the advancement that is taking place as the years roll round; for it is a delegate body representing the associated effort of the whole body of dentists in this country. This is especially true of the report before us, for in this the North and the South were in joint session, as they should always be, without any dividing society lines. The book before us is a handsome volume of 286 pages, which is very creditable to the publisher in the mechanical sense, and none the less a credit to the publication committee of the Society, for it is well edited.

In reading the work we cannot well avoid a mental comment on its literary character. This is certainly of a high order for the proceedings of a society made up of men not pursuing a literary vocation; and as reflecting the literary acheivements of our profession we may well look upon it with pride. There is probably not an association of men in this country that produces its proceedings in a better literary style.

As to the papers, every man who reads them will have his own opinion, as he should, of the views presented by the authors; but he will recognize in them the views of well-known men, expressed in careful and concise language, with the view of defending them against any attack in the discussions that follow their presentation. Such an assemblage of papers as this should be in the hands of every dentist in the land, and be read and well considered. The discussions as well, are important, for they at once point out those views that have not been thought well founded by the peers of the author, and are calculated to cause the reader to think deeper upon the subject in hand. B.

MERCK'S INDEX of Fine Chemicals and Drugs, for the Materia Medica and the Arts. Comprising a summary of whatever chemical products are to-day adjudged as being useful in either Medicine or Technology. With average values and synonyms affixed. A Guide for the Physician, Apothecary, Chemist, and Dealer. By E. Merck, Darmstadt, London and New York, 1889. One hundred and fifty pages. Price, cloth $1.

The above title page indicates pretty accurately the character of the volume. We have examined it with some care and must confess that no single volume that we are acquainted with contains the same amount of condensed information as Merck's Index. Any reader interested in Materia Medica should possess this valuable work.

THE PRINCIPLES AND PRACTICE OF DENTISTRY, including Anatomy, Physiology, Pathology, Therapeutics, Dental Surgery and Mechanism. By Chapin A. Harris, M. D., D. D. S., etc. Twelfth edition, revised and edited by Ferdinand J. S. Gorgas, A. M., M. D., D. D. S., with colored plate and 1,028 other illustrations. Philadelphia: P. Blakiston, Son & Co., 1889. For sale by W. T. Keener, Chicago.

The new edition of this "old reliable" is a handsome book. It makes a strong appeal to be continued as the standard text-book of dental science. The comprehensiveness of former editions has been still further enlarged to admit description of modern methods and the more recent scientific knowledge. On the whole, a book is given us of which we may feel proud, and which will continue to be a guide and stepping stone to dental lore and skill.

Will the editor permit a suggestion as to the next edition? The practical utility of a future work will be greatly enhanced by omitting descriptions of obsolete methods. The objects of the book will be fulfilled by making it to consist of matter abreast with the times only. True, the book would not be so large. Neither would it be so cumbersome. It is of much interest historically, to trace the evolutions of regulating appliances, of crowns, or of canal filling. The antiquarian, however, may find all this in books of a more encyclopedic character.

As in all other books which have appeared, except in the *American System*, the teaching is not abreast with the times. Modern dental science means much more than is set forth in this work. The nature of dental caries and its treatment in the young, and especially the pathology and treatment of alveolar abscess, the management of pulpless teeth, etc., are subjects not adequately treated in any text book which has yet appeared.

The work, however, is as it stands a sacred thing to the dental profession. It seems sacrilegious to change its composition so wisely planned by the illustrious Harris. Thousands will testify to the good it has done them, and no doubt it will grow more and more useful. The keynote of its influence is given in one paragraph from the admirable introduction: "Dentistry as a true science and art, is built upon the foundation of a generous early education, is enlightened by a complete medical course of instruction, is especially trained by a full term of practical pupilage, and recognizes no sliding scale in the quality of the service it renders. Such dentistry will exercise influence in its own, and command respect among kindred professions; for it becomes thus a curative work, second in importance and extent of its usefulness to no specialty of the great Art of Healing."

DENTAL SCIENCE QUESTIONS AND ANSWERS. By L. C. Ingersoll, A. M., D. D. S., Keokuk, Iowa. Second edition. Published by the Wilmington Dental Manufacturing Co., Philadelphia, Pa., 1889. Cloth $2. Pages 140, interleaved for reading or note making.

There are three chapters in this work: Chapter I., Dental Materia Medica; Chapter II., Dental Physiology; Chapter III., Dental Pathology and Therapeutics. The first edition was soon exhausted, making it necessary for the author to produce a second in the space of two years. From an examination of the revised edition we find many additions made, especially in therapeutics, materia medica and pathology. The careful manner of the author is shown in his selection of the orthodox methods of practice, thereby not misleading the student or allowing him to tread on dangerous ground. While works of this character are of value to students in college, they are more or less unsatisfactory to practitioners, especially of the non-student class, in that they prove "a little knowledge is a dangerous thing," etc. No one can fail to have his memory refreshed on many subjects if he reads this book, therefore it is of value, not only to dental students, but to those who will not read other and more ponderous volumes. We hope to chronicle the appearance of a third edition soon, printed on better paper and revised a little nearer the date of publication.

PAMPHLETS RECEIVED.

TRANSACTIONS OF THE NEW JERSEY STATE DENTAL SOCIETY. Eighteenth Annual Meeting, Asbury Park, July 18, 19 and 20, 1888. 119 pages. Published by the Society.

TRANSACTIONS OF THE DENTAL SOCIETY OF THE STATE OF NEW YORK. Twentieth Annual Meeting, Albany, May, 1888. Published by the Society. Publication Committee: Myron D. Jewell, C. C. Smith and R. F. Jones.

A volume of about 130 pages, containing lists of the members of the various district societies, permanent members, masters of dental surgery, etc. Most of the pages have already been published in the various journals, the report of the committee on dental practice, being offered in the DENTAL REVIEW. It has already been republished by several of our contemporaries. This is a readable volume.

COMPTE RENDU DU CONGRES ODONTOLOGIQUE DE BALE, 1, 2 and 3, September, 1888. Reprint from the *Revue et Archives Suisses D'Odontologie.*

CONTRIBUTIONS TO THE HISTORY OF DEVELOPMENT OF THE TEETH. By Carl Heitzman, M. D., and C. F. W. Bödecker, D. D. S., M. D. S. Reprinted from the *Independent Practitioner*; 98 pages.

VALEDICTORY ADDRESS. By Benj. F. Eshelman, D. D. S. H. D. Justi, publisher; 16 pages.

MERCK'S BULLETIN. A periodical record of new discoveries. Introductions or applications of medicinal chemicals; monthly. E. Merck, Darmstadt, London and New York. $1 per annum.

DENTAL COLLEGE COMMENCEMENTS.

UNIVERSITY OF PENNSYLVANIA—DEPARTMENT OF DENTISTRY.

At the commencement exercises, held Wednesday, May 1, 1889, at the American Academy of Music, Philadelphia, Pa., the degree of Doctor of Dental Surgery was conferred by William Pepper, M.D., LL.D., Provost, upon the following named (58) gentlemen, after which an address was delivered by William Osler, M.D., Professor of Clinical Medicine :

Robert W. Albury, Bahamas.
Victor M. Ayala, Cuba.
George E. Barnett, Washington Ter.
James A. Bruce, Australia.
Antonio D. Calves, Cuba.
Lucius W. Cheney, Massachusetts.
Edward J. M. Cooney, Rhode Island.
Arthur W. Cooper, Nebraska.
Wm. A. Culpeper, M.D., West Indies.
George D. B. Darby, Pennsylvania.
William P. DeLacy, Pennsylvania.
J. Edward DeWalt, Illinois.
Walter R. Diehl, Pennsylvania.
Henry T. Dunbar, Vermont.
Horace E. Eaton, Nova Scotia.
Norman S. Essig. Pennsylvania.
Wm. F. Faust, Pennsylvania.
Frank D. Focht, Pennsylvania.
J. Merritt Fordham, Pennsylvania.
John G. Fuller, Pennsylvania.
Georg Gerhards, Germany.
Adin A. Goldsmith, New Hampshire.
Samuel L. Goldsmith, Pennsylvania.
George R. Gray, Massachusetts.
George A. Grotefend, California.
Albert F. Guiteras, Cuba.
Frank T. Hart, New Jersey.
Cornelius F. Horgan, Pennsylvania.
Charles Keyes, Brazil.
Frank E. Lamson, Massachusetts.
William F. Lamson, New York.
Walter J. Leake, New York.
Henry A. Littig, Iowa.
George Luxemburger, Pennsylvania.
George H. Mayer, Pennsylvania.
Jose Luis Miro, Cuba.
Peter S. Mogel, Pennsylvania.
Emilio Nunez, Cuba
William Oser, Switzerland.
Ira W. Parry, New York.
Frederic A. Peeso, New York.
Joseph C. Reap, Pennsylvania.
Frank W. Rees, Washington Territory.
Leroy ReQua, New York.
Charles E. Rhone, Pennsylvania.
John Best Robinson, Pennsylvania.
George S. Root, New York.
Frank E. Roys, Connecticut.
Frank P. Seebold, Pennsylvania.
Wm. E. Stiles, M.D., Pennsylvania.
Frederick M. Stine, Washington Ter.
Robert W. Sweetnam, Michigan.
Rosecrans Trogdon, Illinois.
Miguel A. Velazquez, Costa Rica.
Leonard White, South Carolina.
William H. Wix, Delaware.
Wilber S. Woodward, Ohio.
Charles G. Woolsey, Pennsylvania.

PRACTICAL NOTES.

COPPER AMALGAM.

BY L. VANDERPANT, L.D.S. (ONT.)

I am induced to offer a few brief remarks upon this subject, in the belief that it is one upon which considerable pardonable ignorance exists here, and is spoken of as a "New Material for Filling Teeth." In an interesting paper read before a dental society of New Jersey, in October last, Dr. J. Allen Osmun speaks of it as a *new thing*, and recommends a *modus operandi*, which is liable to discredit a valuable, old and well tested material, viz: "It should be held in the flames," etc.

I merely refer to this article as fairly typical of the amount of general knowledge on the subject.

Copper amalgam is, if not the oldest, yet one of the earliest of plastic stoppings used by English dentists, and was known to them as "*Sullivan's Cement*," coming to hand in the form of an oblong pellet about the size of a garden pea, of extreme hardness and density, and of a dark gray color. It was reduced to a plastic condition by placing a sufficient quantity in a common iron table spoon which had been heated to something less than red, when in about half a minute globules of mercury uniformly appeared, and it was rendered to a suitable consistence with a pestle and mortar, at the same time washing with, first, acidulated water (acid sulph 1 in 50), subsequently in clean warm water till all trace of acid is lost. (An alkali appears to deteriorate the material.)

There is really nothing to add to the above described manner of the working of copper amalgam. The chief points to regard are the avoidance of bringing the material in actual contact with fire or flame, and thorough washing in the mortar.

I am not exaggerating when I state that I have examined the teeth of some of my father's patients which had been filled for forty years, and continued perfectly intact, "Sullivan's Cement" having been the stopping used.

For this, as well as any other amalgam, a very useful instrument is a "plugger," whose working surface has been *tinned* amply. It not only readily takes up the material from the stand, but in process of insertion can be made to take up an excess of mercury.

A common spoon from which the tin has been burnt off, is, with the alcohol lamp, the simplest means of softening the copper amalgam chunks. A German silver one is equally appropriate for gutta-percha.

Many of the popular educational and chemical books to be found in every public library, give instructions on this amalgam. The method of production I have found most satisfactory in result, is to procure a very fine precipitate of metallic copper, from its sulphate (or blue vitriol of commerce), and combine in a pestle and mortar, under continued streams of boiling water, with a sufficiency of bi-sulphate of mercury, until amalgamation occurs. The addition of a few drops of acid sulph. expedites the process. Thorough washing is a *sine qua non*, but as I have previously stated, an alkali appears to be incompatible. I have not produced so fine an article as that of Mr. Claude Rogers, of London, (to whom is due the credit of re-introducing the matter to professional notice) manufactured by Messrs. Ash & Sons, but quite equal if not superior to others in the market. Though I offer the means of production, yet I would not recommend your readers to become their own manufacturers. "Each one to his trade."

In concluding I would confidently assert, that admitting the objection of color, which varies in certain mouths from jet black to lavender or gray, no one from conscientious scruple or dread, who would use *any* amalgam, need hesitate about a copper one, and that as a means of preservation it will eventually rank higher than any we at present possess. Nor is there any objection to giving a coating with some of the alloys containing zinc, which *do* maintain a respectable color, but are disreputable in other essential particulars.

A Simple Method of Making a Piece of Bridge Work.*

By T. A. Long, Philadelphia.

Prepare the teeth or roots that are intended for your anchorages in the same way as usual ; make gold caps or crowns to fit over them. Make the gold crowns either with gold or porcelain cusps. Place the cold caps on the anchorage teeth, and take an impression in plaster or modelling compound. If the gold caps do not come away with the impression, take them out of the mouth and place them in their right position in the impression and cast the model in plaster. When taking the impressions, take two of them ; one with the gold caps on the anchorage teeth, and one without. Make a model from the last named impression for use later on.

Now take a strip of wax about 1-16 of an inch thick and the width of the ridge, or as wide as the case should be when finished, place it on the model reaching from one gold cap to the other. Place on this wax a piece of gold plate sufficiently heavy to give the necessary strength, and long enough to reach from one gold cap to the other, and folded at an angle thus, L, its entire length, curved longitudinally to conform to the bend of the ridge. Place this gold angle bar so that the outer edge of one angle will point toward the labial surface or cheek, and the other edge of the angle toward the top of the piece. Now invert this and solder each end of the gold angle bar to its respective gold crown or cap. This should now be tried in the mouth, and any correction that may be necessary to fit it can be made.

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*Read before the Kentucky State Dental Society, 1888.

It will be found that the gold angle bar will be raised a slight distance from the ridge. Take the new model and place this skeleton on it, use gum or plain teeth, the same kind as are used for rubber work, wax up the piece same as for a rubber plate, covering up the gold angle bar entirely and allowing the wax model to rest upon the ridge. A slight groove running around near the edge of the piece on the plaster model will leave a corresponding ridge on the finished piece, which will prevent seeds or particles from getting under the plate. If there should be any shrinkage of the gum, the piece can be kept clean underneath, as then access can be had to that part. If no shrinkage takes place, experience has taught us that no bad effects follow placing the piece firmly on the gum.

The advantages of this bridge, are: Great strength, simplicity of construction, freedom from retaining secretions under gold plates or gold backings on teeth, as there are no points to retain saliva. It is not liable to be broken, as the teeth can be heavy and strong, and be supported by the vulcanite. The appearance in the mouth is more natural, as it avoids such a great display of gold.

The above was described to me by Dr. Wm. N. Morrison, of St. Louis, and coming from such an eminent practitioner, I am under the impression that it must be practical.

HOW TO PREVENT VULCANIZED RUBBER SHRINKING FROM THE PINS OF TEETH.

M. Aug. Polscher gives the following reasons why rubber shrinks from the teeth after vulcanization:

1. The teeth have not been thoroughly freed of wax.
2. Careless packing.
3. Imperfect closure of the flask.
4. The flask was not held under a continual pressure from beginning to end.

The best remedy lies in a study of the causes, and is apparent:

1. Thoroughly remove all wax.
2. Pack carefully.

3. Close the flask perfectly.

4. Keep the flask under continual pressure.

The last two points are especially important.

In addition to these precautions, the following will be found of advantage:

1. When possible, grind a groove with a corundum disk, between the pins and the margin of contact of the rubber.

2. Roughen the surface of the tooth above the pins.

3. Moisten the teeth and pins with a solution of rubber dissolved in benzine.

4. The entire surface of the teeth, where the rubber comes in contact, may be roughened by the application of fluoric acid. It should be applied with a piece of wood, and care should be taken not to touch the pins with it. Fluoric acid is found in the market in gutta-percha bottles, and may be procured at any dental depot.

SEVENTEEN REASONS WHY MEDICAL STUDENTS SHOULD BE TAUGHT SOME OF THE PRINCIPLES OF DENTISTRY.

PRESENTED FOR DISCUSSION BEFORE THE ODONTOLOGICAL SOCIETY OF INDIANAPOLIS.

BY DR. J. B. MORRISON.

1. As to the first permanent molar.

2. As to the difference between the temporary and permanent set of teeth.

3. When to extract, and when to send the patient to a dentist for examination and treatment.

4. About lancing gums for infants.

5. Treatment and advice about dental operations for women during pregnancy.

6. To remember that three-fourths of all the neuralgias occurring about the face have some relation with the teeth.

7. To remember that a canine tooth erupting out of normal position is not a "tusk," and therefore to be extracted.

8. To learn how to extract teeth before attempting the operation.

9. To remember that it is the *roots* of teeth, and not crowns, which must be extracted.

10. To stop teaching people that the third molar is of no account, and the sooner it is extracted the better.

11. To stop teaching that the retention of so called "dead teeth" is prejudicial to good health.

12. To stop advising patients to apply poultices to the face to reduce dental inflammation.

13. To lance alveolar abscesses inside the mouth and not on the face.

14. To stop mopping out bleeding sockets with the tincture of perchloride of iron to arrest hemorrhage.

15. To stop advising patients to have a mouthful of diseased roots extracted without taking ether, because heart trouble is feared.

16. To advise mothers to look after their children's teeth, and send them to a dentist for examination.

17. In short, to stop practicing dentistry until they know something about it.

MEMORANDA.

Colorado has a new dental law.

Gutta-Percha should be heated on a dry slab.

Dr. A. E. Baldwin has gone to Europe for a vacation.

Dr. Samuel W. Gross, the eminent surgeon, is deceased.

President F. A. P. Barnard, of Columbia College, is deceased.

You can bleach a camel's hair pencil with peroxide of hydrogen.

Drs. I. P. Wilson and W. P. Dickinson were in the city recently.

Copal-ether varnish must be kept from the light, or it grows yellow.

Dr. Sherwood Dunn has located in Paris, France, at 15 Rue des Pyramides.

Drs. L. C. Ingersoll and W. H. Taggart were in Chicago about Centennial day.

When you want iodoform that is odorless, ask for Mercks' *bituminized* iodoform.

Dr. A. L. Northrop is the new president of the First District Dental Society of New York.

Drs. N. W. Kingsley and R. Ottolengui have removed to 115 Madison avenue, New York City.

The Colorado State Dental Society will meet at Denver, June 4th, and continue in session for three days.

Aqueous solutions of disinfectants are best to disinfect instruments. Oils should not be used for this purpose.

In the article on copper amalgam in April number, "mortar and short pestle" should read "mortar and stout pestle." G. N.

Dr. E. G. Betty says he is a believer in the value of iodoform as a disinfectant, in spite of the laboratory experiments. Here too.

Dr. W. B. Ames recommends the use of shavings of medicated gelatine bougies for application to pockets around the roots of teeth.

The Massachusettes State Dental Society will hold its semi-annual meeting at the Institute of Technology, Boston, June 5, 6 and 7, 1889.

Antifebrin has been used locally to assuage pain. Ten per cent Antifebrin and ninety per cent Lanolin. Smear or rub over the affected part.

Dr. Chas. L. Mitchell, of Philadelphia, manufactures a great variety of bougies and suppositories that may be made useful in dental surgery. Try them.

The Governor of California has appointed Dr. E. L. Townsend, of Los Angeles County, a member of the California State Board of Dental Examiners, vice H. J. Plomteaux, whose term had expired.

June 1, 1889, the DENTAL REVIEW staff will inaugurate the annual half-holiday season by closing their offices at 1 p. m. on Saturdays. How many more will join us in this great revolution for health and recreation ?

Dr. J. N. Crouse desires us to state that many gentlemen to whom circulars of the Dental Protective Association were sent have failed to respond. Promptness in this matter may save much trouble, anxiety and future expense.

Wine of opium, one or two drops injected along the side of a root, when the tooth is painful to touch, will allay the pain. The same quantity will relieve pain after the removal of serumal deposits. Do not inject *into* the tissues, but into the pockets.

We received a short call from Dr. Thos. Gaddes, late editor of *The Dental Record*, London. Dr. Gaddes resides at Palmer Lake, Colorado. He was recently married in Newark, New Jersey, to Miss Disney, of London, England. We extend our best wishes.

Dr. Ames says that finely pointed bougies may be passed into fistulæ from the roots of teeth, and that rapid healing will take place from the bottom, much more satisfactorily than when injections of medicines are made. This is a cleanly method, and worth trying.

Creolin, one of the new antiseptics, is a very feeble coagulator of albumen. A five per cent emulsion or solution can be made with water. It is a good dressing for wounds, and it may also be injected around roots of teeth in many cases with great benefit. Try it.

Palmer Lake, Colorado, seems destined to be one of the most popular resorts in that attractive region. Drs. W. Finley Thompson and Thos. Gaddes are both residents of Palmer Lake. Write either of the above gentlemen for pamphlet, giving an account of this new health resort.

Creolin, 10 drops ; water, 50 drops. This will make a milky emulsion, which will stand unchanged for many days. Saturate a pellet or rope of cotton with the above, touch one end of it with iodoform and press into an opening in the gum, or sinus, if you wish to prevent it from contracting or closing.

The Dental Office and Laboratory, has lately fallen into the habit of reprinting matter—valuable no doubt for readers—that originally appeared in other journals—notably in the May number. Dr. Cormany's paper, and Dr. E. H. Allen's, both first saw the light through the medium of the DENTAL REVIEW

Dr. W. C. Barrett, late editor of the *Independent Practitioner*, paid us a visit while on his way to Kansas and the West. Dr. Barrett is looking well and says he feels better than for years. We asked him what he considered to be the burning question of the day and he answered by saying: Education. Dr. Barrett is in sympathy with the approaching International Dental Congress and wishes it to be successful.

The *Zahnarztliche Rundschau* is a new monthly dental journal which has just made its appearance. It is published in the German language, at Innspruck, Tyrol, Austria, and the subscription price is five gulden, or about $2.50 per annum. A Papsch, M.D., is its editor. We bid it welcome in the journalistic arena, as well as to our exchange list.

The Kansas State Dental Association held a very successful meeting at Topeka, beginning April 30. The following officers were elected for the ensuing year: President, H. W. Parsons, Wamego; 1st Vice-President, T. K. Aitken, Valley Falls; 2d Vice-President, L. M. Matthews, Lawrence; Secretary, C. E. Esterly, Lawrence; Treasurer, F. O. Hetrick, Ottawa; Member Board of Censors, J. A. Roberts, Sebetha. Next meet at Topeka last Tuesday in April, 1890.

The *Medical Record* says, there will be eleven international congresses in Paris this summer, all under the sanction of the Government, as follows: 1. Mental Diseases; 2. Forensic Medicine; 3. Diseases of the Ear and Throat; 4. Skin Diseases and Syphilis; 5. Climatic Treatment of Disease; 6. Therapeutics; 7. Hygiene and Demography; 8. Veterinary Medicine; 9. Poor Relief; 10. DENTAL SURGERY; 11. Homœopathy. As before remarked in our last issue, a number of other congresses will be held this summer in Paris, The number is growing. The last accounts state that no less than sixty-five congresses of an international nature will be held this summer between June and November.

Myrtol and Oil of Myrtle.—According to the investigations of Herr Jahns, the essential oil of myrtle contains terpene ($C_{10}H_{16}$), boiling at 158° to 160° C., corresponding to a right-handed pinene; cineol ($C_{10}H_{18}O$), boiling at 176° C.; and a very small quantity of camphor. The "myrtol" was a mixture of right-handed pinene and cineol, or better described as rectified oil of myrtle. Herr Jahns is of the opinion that their activity depends upon the amount of cineol they contain, as this substance has been shown to be identical with cajeputol and eucalyptol, he suggests that pure eucalyptol or a mixture of eucalyptol and rectified turpentine be used instead of myrtol or oil of myrtle,—*Archiev., Feb. 28, 1889.*

POST-GRADUATE INSTRUCTION.

We have been handed the following, with a request for publication, which we cheerfully comply with:

CHICAGO COLLEGE OF DENTAL SURGERY,
April 27, 1889.

WHEREAS, Pursuant to an announcement sent out by the Chicago College of Dental Surgery to Dental Practitioners throughout the country, we have been assembled during the past four weeks in said college under special instructions as practitioners; and

WHEREAS, The diffusion of knowledge and the consequent elevation of the dental profession which results from such assemblies and courses of studies is desirable and important to the profession all over the world, it is hereby

Resolved, That we, as the pioneer class of Dental Practitioners, representing nearly every State of the Union and every section of country from Maine to

Oregon, and the Lakes to the Gulf of Mexico, hereby most heartily commend the action taken by the College in providing such a course of lectures and instruction for practitioners and post-graduates, and believe it will meet with the cordial endorsement of the dental profession throughout the country. And be it further

Resolved, That it is the unanimous feeling and sentiment of this pioneer class, who have availed themselves of the Practitioners' Course, that the measure is a wise and judicious one, and has surely proved so far a great success, and that we are fully satisfied in every way with the course of instruction and facilities afforded to stimulate the class to a higher and better knowledge of the art and science of dentistry, and in the new and valuable features adopted by the best authorities in our profession; and particularly are we pleased with the cordial and courteous treatment and enthusiastic interest shown, and attention given us, by the officers, faculty, lecturers and demonstrators of this college who have come before us.

Resolved, That a copy of these resolutions be presented to the College.

Signed by the class.

Dr. Hamlin Barnes,
" John M. Gallehugh,
" J. J. Condon,
" J. C. Blaine,
" L. W. Ballard,
" J. H. Ferrell,
" W. M. Condon,
" H. L. Pearson,
" E. B. Owen,
" F. F. Douds,
" Levi S. Keagle,
" J. D. English,
" E. F. Thomas,
" Jas. P. Weter,
" Geo. C. Kollock,
" M. Morgenstern,
" W. F. Bullard,

Dr. R. B Tuller,
" J. W. Stephens,
" T. H. Thurmond,
" Chas. W. Crawford,
" Fred Hosley,
" J. A. McDaniel,
" Wm. F. Bullard,
" C. B. Reed,
" O. M. Daymude,
" Jas. N. Stevens,
" W. V. Henderson,
" G. E. Greene,
" D. Siddall,
" G. J. Clark,
" W. H. Prittie,
" H. P. Fahr,
" J. A. Throckmorton.

FRANCE AND ITS UNIVERSAL EXPOSITION.

The intellectual supremacy of France in the world of art and industry has received another confirmation in an unprecedented co-operation in her Universal Exposition. Although Germany officially holds aloof and the Parliament of Great Britain, under Tory dictation, followed the hint of Bismarck, the popular sympathy of the civilized world has been already manifested with remarkable unanimity. Space which was quite sufficient for her last great exposition, the most impressive as it was the most educative the world had ever seen, has proven altogether too small for the demands of the present time. Notwithstanding the avowed hostility of some Governments, and the indifference of others the Exposition will prove a school for civilization. Within its confines will be found the newest thought of the ideal, the scientific and the constructive world.

The French are pre-eminent in their organizing faculty for these special exhibits. Themselves ingenious as well as esthetic, acute thinkers in every domain of the intellect as well as able executants in fine and industrial art, they possess in an exceptional degree that love of novelty, of ensemble and of harmony combined which has kept their country first in the products in which science and art work together. They place their congress of human activities in the most brilliant city the modern ages have beheld. Paris is as practically the idol of France as Athens was of Greece; but the influence which Athens exercised was paltry compared with that of French genius in philosophy, in government, in literature, in decorating designing, in architecture, and in pictorial art. It is still the fashion in England to deprecate the French Republic; to exaggerate the horrors of the Revolution; and to predict that an absolute monarchy or a military dictatorship will be the sequel to the Republic founded on the debris of Napoleonism. But while the prophecies proceed the Republic endures. While the envy of traditional rivals minimizes the influence of France in statesmanship, the Republic invites progress to come to its Capital from every quarter of the globe, and the invitation is eagerly and universally accepted.

American interest is general and practical. Our reasonable sompathy with the Republic found cordial expression in a prompt acquiescence by our Government in the official invitation. An adequate representation of American art has already been forwarded to the Paris jury for that department. The exhibit of American machinery and of its products, of our education system, of our agriculture and marine, will be the most notable ever witnessed either at home or abroad. It is estimated that the ocean travel will exceed by 100 per cent that of any other previous season, and the ship companies are already making more rigorous their passage regulations. However French politicians may amuse themselves meanwhile, it is safe to assume that France will be tranquil throughout the exposition year.—*Exchange.*

TEXAS DENTAL ASSOCIATION.

The Texas Dental Association will not meet until Monday, August 19, 1889, the day before the meeting of the Southern Dental Association. Both meetings will be held in Galveston.

SOUTHERN ILLINOIS DENTAL SOCIETY.

President, T. W. Prichett; Vice-President, L. Betts; Secretary, L. T. Phillips; Treasurer, J. T. Cummins. Time of meeting changed to October. Next meeting will be held in Alton, third Tuesday in October, 1889.

CALIFORNIA STATE DENTAL ASSOCIATION.

SAN FRANCISCO, CAL., May 1, 1889.

To the Editor of the Dental Review:

DEAR SIR—The twentieth annual session of the California State Dental Association, will be held in San Francisco, beginning the third Tuesday in July and continuing four days.

Respectfully yours,
W. Z. KING,
Corresponding Secretary.

MICHIGAN DENTAL ASSOCIATION.

Thirty-fourth annual meeting at Grand Rapids, June 4th, 5th and 6th, 1889. The secretary has issued the following: The usual reduction will be secured at hotels and upon railroads, and everything points to a profitable and enjoyable occasion. It is expected that all of the following list of subjects will be ably presented either by paper or clinic: Implantation, Electro Therapeutics, Irregularities (causes and correction), Art in its relation to Dentistry, Histology and

Pathology, Nitrous Oxide (anæsthetics), Electrical Machinery, Gold, Tin and Amalgam (varieties and methods of using), Crown and Bridge-work, Artificial Palates for Congenital Cleft. Contributions upon any other subjects will be gladly received. Visitors cordially welcome from adjoining states.

NEW YORK STATE DENTAL SOCIETY.

The Programme of the New York State Dental Society came out too late for notice last month, but it was a good one. Here it is:

President's Annual Address, Dr. J. Edw Line, Rochester.

PAPERS.

Rev. Edward D. M. Brown, A. M., M. D., LL. D., New York Subject: "Talmudic Medicine and Dentistry."

Dr. Frank Abbott, New York. Subject: "Facial Neuralgia."

Dr. Wm. H. Atkinson, New York. Subject: "Pyorrhœa Alveolaris."

Dr. S. B. Palmer, Syracuse. Subject: "Regulating Teeth."

Dr. Chas. L. Lang, New York. Subject: "Mesmerism and its Therapeutical Applications."

CLINICS.

Dr. Geo. L. Curtis, Syracuse. Subject: "Removable Bridge Work."

Dr. F. T. VanWoert, Brooklyn. Subject: "Crown and Cast Tip Work."

Dr. R. Ottolengui, New York. Subject: "Amalgam Crowns."

Dr. V. H. Jackson, New York, Subject: "Regulating Appliances."

Dr. J. Merriam Edwards, New York. Subject: "Metallic Capsules for Implantation.

Dr. E. P. Brown, Flushing. Subject of clinic to be announced at meeting.

Dr. H. A. Parr, New York. Subject of clinic to be announced at meeting.

Dr. A. H. Gilson, Boston. Subject: "A. H. G. Strips and Discs."

Prize Essay—Volunteer Papers—Incidents of Office Practice.

THE KENTUCKY STATE DENTAL ASSOCIATION

Will hold its nineteenth annual meeting at Louisville, Ky., beginning Tuesday, June 4, 1889, at 2:30 o'clock P. M., and continuing three days. The meeting will be held in the Louisville College of Dentistry, Chestnut Street, between Floyd and Preston.

PROGRAMME.

Address of the President, Dr. J. H. Baldwin, Louisville. The subjects for discussion and papers to be read are as follows:

Prof. J. Taft, Cincinnati, O.—Subject of paper not given.

Dr. F. M. Harris, New Albany, Ind.—"Dentistry among the Indiana White Caps."

Dr. H. D. Eggers, Carrollton, Ky.—"Dental Companies, or Cheap Dentistry."

Dr. W. J. Zinn, Williamstown, Ky.—Subject of paper not given.

Dr. W. P. McQuown, Georgetown, Ky.—"Use and Effect of Cocaine."

Dr. H. B. Tileston, Louisville, Ky.—"Application of Rubber Dam."

Dr. C. G. Edwards, Louisville, Ky.—"Dental Irregularities."

Dr. F. Peabody, Louisville, Ky.—Subject of paper not given.

CLINICS.

Dr. B. C. Hinkley, Cincinnati O.—"Application of Rubber Dam to Posterior Teeth and Difficult Cavities."

Dr. W. J. Zinn, Williamstown, Ky.—"Cylinder Filling, or Setting a Logan Crown by a New Process."

Dr. E. M. Kittig, Louisville, Ky.—"Inserting Logan Crown with Gold Collar."

Dr. W. E. Baxter, Frankfort, Ky.—"Combination Fillings, Gold with Amalgam Base."

Dr. W. P. McQuown, Georgetown, Ky.—Subject not given,

Dr. G. S. Seymour, Louisville, Ky.—"Gold Filling with Needle Points."

Dr. J. F. Canine, Louisville, Ky.—Subject: "Celluloid."

Dr. J. B. Alexander, Louisville, Ky.—"Gold Fillings."

Dr. J. W. Wallace, Louisville, Ky.—"Impressions."

Dr. B. Oscar Doyle, Louisville, Ky.—"Metal Dies for Gold Crowns."

The State Board of Examiners will meet daily during the session to register and examine applicants.

Members of the profession at large are cordially invited to attend and unite with us in making the meeting one of great profit.

For further information address the Secretary, DR. CHAS. E. DUNN,
No. 529 Second Street, Louisville, Ky.

PHENOL SODIQUE (WILDMAN).

Crude Carbolic Acid	minims	188
Caustic Soda	grains	31
Water enough to make	ounces	8

Dilute to suit.

FOR COLD IN THE HEAD.

℞ Eucalyptol	minims	xxx.
Spirits Camphor	"	xv.

M. Sig. Three drops every fifteen minutes for one hour, and three drops every half hour until relieved. This must be taken early; not later than twelve or eighteen hours after "catching cold."

LISTERINE.

The American Druggist says that Listerine is composed of (about) the following ingredients.

Benzoic Acid	120	grains.
Borax	120	"
Boric Acid	240	"
Thymol	40	"
Eucalyptol	10	drops.
Oil Peppermint	6	"
Oil Thyme	2	"
Alcohol	8	fl. oz.
Water enough to make	32	"

Any of our readers can try the experiment of making it, as above suggested

FOR DESTROYING PULPS OF TEETH.

℞	Arsenic Acid	gr. xc.
	Hydrochlorate Cocaine	gr. x.
	Iodoform	gr. vii.

Oil of cloves add q. s. to form a stiff paste.

℞	Acidi Arseniosi	gr. xc.
	Cocaini Hydrochlor	gr. x.
	Iodoformi	gr. v.

Ol. Cassia q. s. to form a stiff paste.

Apply $^{1}/_{60}$ gr. to the pulp, and allow it to remain 48 hours. Always seal the cavity with gutta-percha. When the dressing is removed, keep the cavity dry. Wash it with dialysed iron, puncture the pulp and apply alcoholic sol. of tannin. Seal the cavity for eight days, when the pulp may be removed painlessly. The root may be filled at once, if nothing has been allowed to get in the cavity during this time.

℞	Hydrochlorate Cocaine	gr. x.
	Melted Carbolic Acid	gr. xc.

M. Sig. Use in a sensitive tooth, previously drying the cavity and heating the liquid.

A NEW COMPOUND ANTISEPTIC.

Dr. Emil Rotter is responsible for the following:

Corrosive Sublimate	5	parts.
Chloride of Sodium	25	"
Carbolic Acid (Cystals)	200	"
Chloride of Zinc	500	"
Sulphocarbolate of Zinc	500	"
Boric Acid	300	"
Salicylic Acid	60	"
Thymol (Crystals)	10	"
Citric Acid	10	"

This is soluble in water. One-half of a Troy ounce may be dissolved in a quart of water, when it will give a clear solution. As a disinfectant for water closets, spittoons, etc., it might prove useful, as well as for use as a mouth wash.

DR. HARLAN'S TOOTH PASTE.

℞	Cretae Precip.	
	Pulv. Orris Rad. *aa*	℥ii.
	Pulv. Saponis Cast. alba	℥ss.
	" Os. Sepia	ʒii.
	" Myrrhæ	ʒi.
	" Sacch. alba	
	" Boracis, *aa*	℥i.
	Carmine, *a*	grs. x.
	Ol. Gaultheria	ʒi.
	Glycerine	
	Honey, *aa*	℥i.

M. ft. paste.

KILLED WHILE PULLING A TOOTH.

A colored man named James Coleton, who resided a few miles south of Clinton, Wis., met his death yesterday in a most remarkable manner. He was in the habit of extracting his own teeth, which usually came so hard as to require his utmost strength to draw them. But he tackled one yesterday that came so much easier than anticipated that the reaction caused his head to fly back so violently as to partially dislocate his brain, causing his death a few minutes afterward.—*Daily Paper*.

OBITUARY.

HENRY B. NOBLE, JR., D.D.S.

Dr. Henry B. Noble, Jr., died at his home in Washington, D. C., after a lingering illness. His death was not unexpected by his large circle of friends. For a fortnight previous to his death it was known that his recovery was impossible. He was fully aware of his condition, but bore his sufferings with wonderful composure and cheerfulness. He had been confined to his bed since last January, but for a long time his family had hopes of his finally being restored to health.

He was born in 1861 and received his academic education at Columbian University, and then took up the study of dentistry with his father. He completed his dental education at the University of Pennsylvania, class of '84, graduating at the head of an unusually intelligent class. Previous to this he had completed two years of a medical course at the medical department of the Columbian University. With the creation of the dental department of the Columbian University Dr. Noble took a very active part, especially in the establishment of the infirmary, and was one of the first demonstrators appointed. Three years ago he was called to Mexico by ex-Gov. Shepherd in order to attend himself and the American colony at Batopilas. He had been President of the District Dental Society, the youngest member ever so honored. He was well known in Washington, and his death is a severe blow to many friends.

At a special meeting of the Washington City Dental Society the following preamble and resolutions were adopted:

WHEREAS this society has heard with profound regret of the death of our esteemed friend and professional brother, Dr. H. B. Noble, Jr., late President of this society, who passed from this life on April 19th: Therefore—

Resolved, That in the death of Dr. H. B. Noble, Jr., this society has lost one of its brightest and most active members, one whose life, though brief, in his profession bid fair to find in him not only a man devoted to his professsion, but one eminently calculated to advance its best interests.

Resolved, That this society extend to his bereaved family our heartfelt sympathy in this their great sorrow.

Resolved, That this society attend the funeral services in a body.

Resolved, That a copy of these resolutions be transmitted to the family, and also be published in the city papers.

THE

DENTAL REVIEW.

VOL. III. CHICAGO, JUNE 15, 1889. No. 6.

ORIGINAL COMMUNICATIONS.

SENSITIVENESS OF DENTINE NOT EXPLAINED BY FLUID CONTENTS OF TUBULI.

BY LEVITT E. CUSTER, B.S., D.D.S., DAYTON, OHIO.

Among other theories of the sensitiveness of dentine, there is one that the contents of the tubuli is a liquid which being in the form of a column, and surrounded by unyielding walls, is in such a relation that pressure upon the distal end forces this column of fluid through the tubuli, causing an outflowing at the pulp-end in sufficient quantity to produce pressure and pain. This is the theory held by many, as accounting for the sensitiveness of dentine. But let us get down to rock-bottom facts in its consideration, for it is only by the elimination of some of the theories upon good grounds that we can arrive at the truth.

Now, if the contents is a fluid, if it does not act in a mechanical manner as a means of equilibrium, it cannot receive and transmit sensation—that is the property of nerve tissue and protoplasm alone. Therefore, we are restricted to the consideration of a column of fluid surrounded by rigid walls, which column acts mechanically by transmitting vibrations, or by being pushed through the tubuli by the action of the instrument in cutting. This outflowing of the tubular contents into the pulp chamber, and producing pressure, is what is claimed by the adherents of this theory as the cause of pain.

This theory is hardly tenable, from the fact that the surface covered by the instrument, when cutting, is very small; that when cutting there is very little, if any, pressure upon the column of fluid. The instrument cannot enter the tubuli, it only cuts across the end, which can make but little pressure, and it is difficult to conceive of anything as the result but an infinitessimal bulging at the proximal end of the tubuli. Now, owing to the exceedingly small amount of liquid contained in the tubuli, if all such were to be emptied into the pulp chamber, the pressure, if any, would scarcely be felt on account of the very small amount of room it would occupy. But we will take a broader view of it. Suppose the tubular contents did flow out enough to make pressure, is it not a law of the economy that blood flows in the direction of the least resistance, and therefore the arterial supply of the pulp would be retarded while the venous exit would be accelerated, and thus the pressure be compensated for, and an equilibrium of pressure maintained.

The fallacy of this theory of sensitiveness of dentine is further proven by the fact that pressure alone, by a blunt instrument upon the dentine does not cause pain—it is only when that instrument is drawn across the distal ends of the tubuli. Also, that when first cutting in the interzonal layer, in that portion where there is the most extensive anastomosis of the tubuli and their contents the pain is most severe, where, if the contents are fluid, and pain depends upon pressure, it should be the least, for pressure upon one tubule and contents would more likely be communicated laterally, and produce bulging in a near portion of the cavity rather than overcome all the resistance and friction necessary to reach the pulp and there produce pressure.

Another proof of the fallacy of this theory is, that if it is a liquid it cannot be pulled out of the tubuli, much less undergo the process of mounting on a slide for the microscope and yet maintain its identity as such. Who ever saw an unsupported column of a liquid unless it was in motion?

Under the microscope the dentinal fibril is seen as an extension of the cell contents of the odontoblast into the tubuli, which, as is well known, is not a liquid at all, but a jelly-like mass of protoplasm.

That the tubular contents is not a fluid which acts mechanically in communicating sensation is further proven by the action of obtunding agents. It will be noted here that the strongest proof offered by the adherents of this theory is taken from the effects of obtunding agents, especially by dehydration. Now, on two other occasions I have pointed out the relation of water to the dentinal fibril, of whatever its structure. In this case, water or moisture is essential to a perfect performance of nerve function as a constituent of the fibril, and if the fibril does not entirely fill the canal at places water undoubtedly fills the interbeaded spaces, where it acts as a condition for preserving an equilibrium of pressure. Now, if this water be thoroughly withdrawn from the fibril itself, and from around the fibril, sensation cannot be conveyed any better than if the tubular contents were a liquid, and that were withdrawn. All tissues containing nerve endings, when deprived of moisture or dried up, cannot receive and communicate nervous sensation of themselves; they can only mechanically transmit vibrations. I have also, in the same connection, pointed out the fact that owing to the peculiar structure of dentine, dehydration acts as an obtundent upon sensitive dentine more powerfully than upon any soft tissue. The living and sensation-conveying portion of dentine is enclosed in long unyielding walls, composed almost entirely of inert lime salts. The communication with the nutritive supply, and with the internal moisture supply, is long and tortuous. Each tubule and contents seldom sends off intercommunicating branches. Each tubule and contents opening into the cavity is in communication with the pulp at the one end and with the air and external agents at the other. This is the only instance where a thread of living tissue is in contact at one extremity with life and the sources of nutrition, and at the other with external agents. So, from the above condition of things, the extreme length and small diameter of the dentinal fibril and its enclosure in inert calcified walls, it is evident that dehydration by chemical agents, and by heating the calcified walls, can be most thoroughly accomplished before moisture can be drawn from within, and that while the fibril is deprived of its moisture constituent it cannot receive and communicate sensation. So dehydration of the fibrils, which we believe the dentinal canaliculi to contain, is just as powerful an obtundent as if the contents were entirely fluid, and this were evaporated at the distal ends of the tubuli. The only manner in which the free fluid portion of the contents of the tubuli could produce pain would be when it is condensed by the instrument in cutting, if this does condense, by making lateral pressure upon the thread of nerve protoplasm which incompletely fills the tubuli.

If the contents of the tubuli is a fluid without albumen, coagulating agents would have no effect as obtundents. Carbolic acid and chloride of zinc would be of no value.

Reduction of temperature, if the contents are entirely fluid, would be of no value unless it reached the freezing point.

Altogether, we cannot accept the theory of the tubular contents being entirely fluid (it is entirely too thin). A more probable one would be, that through the tubuli runs a thread of tissue, or protoplasm, which is highly endowed with neural function. This does not entirely fill the tubuli, so that around it and filling the interbeaded spaces between the fibre and the walls is a fluid, pressure upon which in cutting is communicated laterally upon the sensitive fibre rather than the pulp. The structure of the fibril is probably protoplasm, a prolongation of the cell contents of the odontoblast, or "fibriloblast" of Andrews. This is drawn out from the first deposit of dentine under the enamel and cementum to the last layer of dentine next to the pulp, and still remains as such. Since simple and undifferentiated protoplasm has the vital property of irritability, may it not be that in this instance, and in this relation, the protoplasmic dentinal fibril has an exalted sensibility? The connection of the odontoblast with the nerve endings of the pulp is very intimate, and by that means the fibril finds communication with the sensorium.

FACIAL NEURALGIA.

BY W. A. STEVENS, M. D., CHICAGO, ILL.

Tic Douloureux, or Neuralgia Facie. Neuralgia is a generic name, and is applied to various pains which take possession of the human being, and in many instances is given because the diagnostician is not capable of giving or forming a correct opinion of the difficulties, therefore calls it neuralgia, which causes many sins. Within a short time I have known of one who has been informed that she had neuralgia of the brain and must cease from studying; and another has neuralgia of the medulla oblongata. I think they are both unfortunate in being the offsprings of wealthy parents, for the disease is not of so serious a nature as to prevent their attendance at places of amusement and evening social entertainments, which causes a greater exhaustion of nerve force than average studying.

Neuralgia is a phenomenon, and not a disease; it is an indication of a disturbance either near or remote from the location of the pain. The symptoms are various: paroxysmal, which last a few minutes and then cease, to return after a short interval; periodical, occurring at certain hours of the day, and often continuous, without any inflammation or engorgement of the parts where the pain is located. The causes are numerous, viz.:

- Exposed nerves,
- Sensitive dentine,
- Roots of teeth,
- Pulpless teeth,
- Pregnancy,
- Menstrual irregularities,
- Exostosis,
- Pulp nodules,
- Injured nerves,
- Injured tissues surrounding the nerve trunk,
- Malaria or marsh poison,
- Alcoholism,
- Tobacco,
- Crowding of the teeth,
- Developing wisdom teeth,
- Pressure of plate on some nerve trunk.

(The most decided cases are odontalgia.)

Dr. Gross says: Two cases of menstrual irregularities; one a lady of rank, the other a nun. Both had teeth extracted without relief. Believed by him to be irritability of the uterus.

* * * I am much inclined to the opinion of Dr. Garretson, who says surgical operation, "by division or resection of nerves, in facial neuralgia, where such interference is most frequently practiced, the history of the majority of cases has certainly not made sufficient offset to balance the risks incurred." He has given us *only four recorded* cases of operations on the inferior dental nerve which were a complete success. I am inclined to believe where there is no positive disintegration of the teeth we should look for the cause in the vitiated condition of the circulation, when the patient should be consigned to the tender mercies of the physician.

In most cases, if not all, the foundation cause of neuralgia is in the blood; during pregnancy the mother's blood becomes loaded with effete matter—of her own, added to this that of the growing fœtus, with some organ incapable of performing its full or increased functions required of it, the blood not remaining in its normal condition, and as it surrounds every nerve it creates a disturbance at the weaker parts. * * * As dead teeth and roots are foreign substances in the jaw, this gives rise to much of the trouble they experience in this connection. The same will occur with irregular menstruation, malarial infections, or, in fact, anything which vitiates the blood. Another cause is the rapid decay of the teeth during pregnancy, causing the fluids of the mouth to assume an acid condition, dissolving the lime salts, especially at the margins of the gums, where the fluids of the mouth are mostly held, and teeth where disintegration has already commenced, causing rapid dissolution of tooth substance, until it has inflamed the nerve centers of the teeth. As a result we have Tic Douloureux and Facial Neuralgia, in a less or greater degree, according to the physical condition of the patient.

* * * An alkaline condition being the more normal state of the mouth, we have less or no disturbance when the blood presents this condition.

The theory advocated by many writers and urged, with considerable force, that the dissolution of the lime salts of the teeth is a demand of nature to build the osseous portion of the fœtus, I am not ready to concede.

Treatment—Remedies—Destruction of exposed pulps. Sensitive dentine topically. Extraction. Electricity (galvanic [constant] Faradic current) two to five minutes. Treating the peculiar blood taint. Chalk in pregnancy topically.

Treatment by the ancients.

Extracts from medical work of 1684:

Take the skin of an adder, burn and beat it; make it up in oil about as thick as honey, and apply to the tooth.

Take the leg of a toad, cleanse it from the flesh; rub the aching tooth with the bone, and the pain will cease in a moment.

Fill the cavity with turpentine. Then take a piece of copper some three inches long and one-eighth of an inch thick, heat it hot and plunge it into the tooth. (Patient placing his foot on surgeon's toe, etc.)

Cases—(Pregnancy.) Malarial. Mrs. A. Pain in left upper central, lateral and cuspid, sound. Extracted by urgent request of her physician. Pain did not cease until after birth of child.

No. 2. Pain commenced about the end of seventh month. Left lower second molar, pulp not exposed. Extracted; pain ceased.

No. 3. Suffered for two weeks with left superior wisdom tooth. Extracted when within two or three weeks of confinement. Pain ceased and the patient completed time of gestation.

1869. N. S. O. Young woman about 20; several roots in her mouth, had suffered for years with facial neuralgia. Had received medical treatment and got no relief. Extracted all the roots and diseased teeth. Immediate relief and no recurrence of the neuralgia.

Mrs. S., aged 50. Left upper first molar under treatment for six months by a physician for facial neuralgia. Drilled into the tooth and found the pulp dead. After the roots were filled pain ceased.

March 12, 1889. Mrs. S. Left lower wisdom tooth. Ear-ache, sore throat, facial pain in the upper portion of the face. Tooth extracted under influence of nitrous oxide. No recurrence of pain within three weeks. *Had suffered for a year.*

March 29, 1889. Lady married, age 30. Left 6-year molar. Tooth sore ; ear-ache, sore throat. Extracted. Relieved in two days.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY.

ANNUAL ADDRESS BY THE PRESIDENT, DR. GEO. H. CUSHING.

Mr. President: Twenty-five years ago a number of gentlemen throughout this State agreeing as to the necessity for a State organization which should tend to elevate the standard of professional qualifications among dentists, met together and formed this society, whose twenty-fifth anniversary we are now to celebrate.

Such a celebration has more than usual significance in view of the peculiar conditions surrounding our profession during the quarter century last past, and a brief review of the main incidents of the history of the society should prove valuable to us if we study it aright.

When this society came into existence, dentistry was just emerging from its ambiguous position, was beginning to assume its place as an independent profession, and to be so recognized by the other professions.

The State of Illinois at that time was regarded by our Eastern brethren as the extreme west, and its inhabitants but little better than half civilized. The barriers of professional jealousy and secretiveness were only just beginning to be broken down, especially in these parts, then so remote from the centers of professional culture, and the aspirations for a more true professional standing, based on a higher and broader education, were then for the first time pulsating through the brains of some of the more thoughtful men of the profession.

Under these conditions it may readily be supposed that the task of creating a State Dental Society, was by no means an easy one. The younger men of the profession to-day can have no adequate conception of the difficulties that had to be surmounted at that time, because they can know nothing of the intensity of the jealousies of those days ; of the selfish fear in the minds of many lest they might impart some valuable secret to their brother practitioners ; or of the indifference of the great mass of dentists to the attainment of any higher standard either of theoretical or practical qualifications.

Yet despite all these discouraging features, the call for a meeting for forming a State society was responded to in a much more general way than was anticipated, and the seed was then sown whose perennial flower and fruitage have been developed into the fair results we witness to-day.

A quarter of a century in the history of such a society, Mr. President, begotten under such auspices in the very infancy of the profession is a long time, and the progress of events during that period demands the earnest study of all thoughtful men.

It would not be profitable to attempt to detail all the difficulties that beset the path of this new society, to enumerate the instances of efforts to embarrass those who were determined to make the movement a successful one, or to tell of all the unkind words and acts calculated to discourage the enterprise. Suffice it to say that enough earnest men continued faithful to their convictions, to overcome all such obstacles and to gain such steady accession to their number that we are enabled to-day to claim that the Illinois State Dental Society stands as *one* of the best societies on the face of the globe. What need is there for asking, "what has this society done for its individual members? Each must answer for himself. We all know what the answer from some would be, it has frequently been given before : "All that I am I owe to this society !" Those of you who have been at all observant have watched the progress of development of more than one of your members from germs of apparently unpromising quality to the attainment of national reputation, and some even of world-wide fame ; and in most instances you have observed that such men have found no stopping-place, but are more and more inclined to move onward and upward in their pursuit of scientific knowledge.

If we ask "what has this society accomplished for the profession generally?" the answer must come from every locality, "it has elevated the professional standard; it has in a measure developed the appreciation of the public of proper professional qualifications; it has brought men to associate together, and taught them to appreciate one another; has developed brotherly love, and stimulated immensely the desire for higher culture."

There is not a locality in the State where the beneficent influence of this society has not been felt in a greater or lesser degree. Look at the five flourishing societies recently organized through the suggestions of this one! Who can estimate the good which these are accomplishing?

Thus have we grown from the unpromising seed sown twenty-five years ago, to be a beneficent power—a power which has been mainly the instrument in establishing the status of our profession in this State as equal to that of any other, and superior to many; to a position commanding the respect of the profession at large—to the point where we can justly claim that among dental societies ours has few peers and no superiors.

For our achievements we may very properly indulge upon this occasion a just pride, and thus much of self-gratulation; but we should sadly miss the true value of such an anniversary review, did we neglect to recognize the prime factors in this successful progress, or to profit by the lessons of the past for our guidance in the future.

To what, then, can we attribute the phenomenal success which has attended our career? Simply to the persistent devotion of those who organized this movement—to their unselfish consecration to what they deemed their duty and to the success of their efforts to inspire the same spirit in those coming into the society, from time to time, until we have become, as it were, one man—influenced by one high motive. The too common incentives to such work, the hope of personal preferment, the ambition to be talked about, and the greed for office, had little influence with them, and the history of this organization demonstrates how fully this policy has been the ruling one. How many times it has been said by visitors from distant States "This is the only society I ever attended in which I did not hear on all hands, as soon as I arrived 'who are you going to vote for for President?'" This ignoring of politics and the high purposes developed in the members, are the main factors in such success as we have achieved.

But have we done all that we might have done? Do we stand quite as high as we might have stood, had we shown more of that spirit of unselfish devotion? Suppose the movement which resulted in the formation of so many local societies had been started years ago—how much more the general advancement would have been to-day! Suppose many who have staid away from the meetings for some flimsy excuse—because they would rather go fishing, or for some other equally insufficient reason, had given their duty to the society the preference, or suppose many who have repeatedly been solicited for papers or clinics had cheerfully responded, how much greater might our development have been!

That the policy of the society has, in the main, been a wise one, is shown by the results achieved; that the best results can only come through the devotion of the individual members to the common cause is self-evident, and the measure of our future success must be in direct ratio to the extent of our individual effort, based upon the unselfish motives and earnest endeavors which have largely characterized the society in the past.

There is, perhaps, no suggestion as to the future management of the society that may tend to more fully develope its beneficent power than that already made, except one, and that is, that if possible all the business of the society should be performed by an executive committee or council, say of eleven members. Were it possible to make such an arrangement, our scientific and practical work would be much more thoroughly accomplished, and our advancement consequently more rapid and satisfactory.

Such a method prevails in the British Dental Association, and The Odontological Society of Great Britain, and in the Ohio State Dental Society, of this country, and in all instances works, it is said, with entire satisfaction. It might be advisable to appoint a committee to investigate and report on such a scheme, and to prepare the details necessary for carrying it into operation, provided they thought it best to recommend its adoption.

With such a method in practical operation, and with a renewed and increased devotion to the interests of the profession, what might not be predicted of this society at its fiftieth anniversary!

REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

Mr. President: Your Committee on Dental Science and Literature beg leave to present the following as their annual report:

But few facts of special interest to the dental student, either microscopical or histological have developed since the last report. At that time hopes were entertained that additional knowledge would be forthcoming, giving positive evidence regarding the manner of the attachment of implanted teeth. But these hopes have not been fully realized. We were promised that sections of tooth substance *in situ* would be made from implanted teeth in the jaws of lower animals, but if teeth have been thus implanted and sections made therefrom, reports of such cases have not as yet reached your committee.

In regard to the practical value of implantation, it is as yet impossible to place an estimate; while it is true that practical successful cases are now of over three years' standing, it is also true that a great many failures are gradually reducing the percentage of successful ones. The subject we may consider still occupies the experimental stage, with the probabilities that in especially adapted cases it will become a permanent branch of surgical dentistry. The importance of the subject is apparent when so conservative a work as "Harris' Principles and Practice of Dentistry," in its twelfth edition, just from the press, takes cognizance of the subject, describes the operation, and gives it a place in our permanent literature.

The most notable articles on implantation published during the year are those of Dr. H. A. Smith, in the transactions of the joint session of the American and Southern Dental Associations, 1888, page 164, and of Dr. Rodrigues Ottolengui, on "Implantation Surgically Considered," in the *Brooklyn Medical Journal* for February, 1889. Of the latter article extracts appeared in the *Dental Cosmos* for March, 1889, page 217.

Experimentation during the past year has led to the implantation of metallic capsules, platinum cages with sponge graft and bone graft, corrugated porcelain roots, lead-covered gold capsules, etc. The committee is not in possession of proof that any of these foreign substances have been retained in the jaw for a longer period than that required to produce sufficient inflammation to result in the expulsion of the foreign body. However, this is not proof of the impossibility of favorable results, and we await with anxiety the results of the interesting experiments now in progress.

Dr. Andrews, of Cambridge, Mass., has been able, by photomicrography, to exhibit before a large audience the development and decay of teeth in a manner most satisfactory.

Nothing, perhaps, made a more lasting impression on the minds of the attendants upon the twenty-fifth anniversary meeting of the Chicago Dental Society than this exhibit of Professor Andrews. Since pictures of these tissues may be made so perfect in this manner we shall not need in the future to make allowance for the imagination of the observer or the peculiar and beautiful twirl of his pen in making the drawings, which are given us as his conception of the tissue under consideration*.

At this same meeting Professor Black gave in a paper, which has since appeared in the DENTAL REVIEW†, the results of his investigations regarding the relative value of antiseptics. The facts developed tend to show that drugs are used both in general and special practice, empirically; iodoform, thymol, gaultheria, eucalyptol—any of which we had supposed to inhibit the growth of septic organisms, do not seem to possess that power. Mercuric chloride, oil of cassia and oil of mustard, so far as his examinations extended, lead in inhibitory power. The paper is especially worthy of your perusal.

The committee is of the opinion that the antiseptic property of copper amalgam has been over-estimated, and that the use of copper amalgam is not as general as it was a year or two ago. A supposed special advantage of copper amalgam—that of being worked under moisture—is possessed to a certain degree by all the amalgams, and the only advantage the copper amalgam possesses in this respect is, that the latter may be worked in a more plastic condition. To make a perfect filling with it when worked under water, it requires, like other amalgams, the presence of more mercury and packing so thorough as to drive out all moisture from the cavity. Gold too, can be worked under water, if sufficient pressure be used to condense the gold and to drive out the moisture perfectly. We trust that some member of this society may investigate the antiseptic property of copper amalgam, and report the results of such investigation.

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* DENTAL REVIEW, April, 1889.

† DENTAL REVIEW, February and March, 1889.

The committee welcomes the timely warning given to those who practice *indiscriminate and abusive* immediate root filling, and calls the attention of the society to the fact that a thorough knowledge of the patient, the condition of the case, and the action of the drugs is absolutely essential to success, and that *not every case* presented is a favorable one.

There is no field in the whole range of dentistry that offers as much encouragement as that having for its ultimate object the production of a plastic filling having the color of tooth substance, the stability of gold, and requiring the ease of manipulation of the cement fillings of to-day. That member of this society who will produce this filling material, will outrank the greatest benefactor of the dental profession. The beautiful molten gold fillings cemented into the cavities of teeth, the plain white porcelain, and the gum-colored porcelain fillings, bridge-work and crown-work, all, to a greater or less extent, depend for success on the insolubility of the medium which holds them in place.

A new preparation of gold—at least new to this country—has recently found its way to our shores. It is a crystal gold invented by the late M. zur Nedden, of Switzerland, and now prepared by his widow according to a secret process. The advantages claimed for this gold make it the most desirable preparation now on the market. Experiments extending only over a brief period, justify the belief that much which is claimed for it is true. The gold can be manipulated in half of the time usually required for most preparations of gold; while during manipulation it seems as soft as the softest gold we have ever used; the finishing proves exactly the contrary. The pressure required to place the gold is so slight that it can be readily conformed to frail or inaccessible borders or undercuts. In private use in Germany, France and Switzerland, this gold has stood the test of twenty years, it is said, quite admirably. We trust in the future to be in a position to more fully report on this subject.

The most noticeable fact in regard to the new books of the year, is an apparent tendency in our writers to abandon the compilation of ponderous encyclopedic works and to give us instead, simple text-books, monographs, and works of reference.

The little monograph by Dr. Black, on "A Study of the Histological Characters of the Periosteum and Peridental Membrane," is the most noticeable one of the year, as it is entirely new in matter, and is in the line of original research. In it he combats successfully the idea of a dual peridental membrane so tenaciously held by other writers. He gives us for the first time a clear idea of the offices of this membrane, its histology, and its relation to contiguous parts. These points are made clear by abundant illustrations drawn from specimens prepared especially for this purpose.

The modern treatment of pulpless teeth, the study of irregularities, and of diseases of this membrane, have rendered necessary a work of this kind. Dr. Black has done his work well.

"Irregularities of the Teeth and their Treatment," by Eugene S. Talbot, M. D., D. D. S., is one of the books which will be especially helpful to the dentist. His treatment of the subject is logical, in order, concise, lucid, and practical. The chapter on etiology shows us, what we hinted at above, that there is yet much to be learned on this phase of the subject. His remarks about fees are timely and sensible, especially to the country dentist. While there is little that is new, the treatment and arrangement is such that it will be one of the constant reference books of the library.

The second, in what we hope will soon be a full line of dental text books, is "Operative Dentistry," by Thos. Fillebrown, M. D., D. M. D. It will appeal more to the student and lecturer than to the general practitioner. However, it is full of hints in each of the departments of operative dentistry, some of which may be new and helpful to the dentist; and the directions given, while possibly too meager in detail, are very plain and practical.

A large number of the illustrations savor too much of the advertising pages of dental journals. This holds true of other dental books as well. We wish it were possible to make a text book without this objectionable feature.

The section on "Formation of Cavities" seems very incomplete. Even for a text book it leaves too much to the imagination of the student. The section on "Bleaching Teeth" is rather too positive in tone. An inexperienced person reading this would think it an easy matter, while in point of fact we know it to be one of the most uncertain of operations.

His treatment of chronic abscess with fistulous opening seems too slow in method and an unnecessary waste of time. At least that idea would be conveyed by the reading.

On page 115, in regard to a chronic abscess, he uses the following language: "If the discharge from an abscess is septic, strong antiseptics are needed."

In the light of recent investigations a discharge from a chronic abscess is always septic.

It does seem that the time had come when the description of obsolete methods of practice, even if followed occasionally, should be omitted from our text books. A description of the "key" would be in place in an encyclopœdia, but out of place in a modern text book. The author undertakes to do too much for the purpose in view, namely, the preparing of a text book. This is seen again in the latter half of the work, which is devoted to crown and bridge work. This part does not deal with principles; it is simply a compilation of everything on the subject, and in no sense constitutes a proper text book.

"Dental Metallurgy," by Chas. J. Essig, M. D., D. D. S. Second edition. Revised.

The first edition of this manual was warmly welcomed by the profession a few years ago. There are a few changes of minor importance in this edition. We would suggest a chapter devoted to working in steel and iron, the making and shaping of instruments, and with much fuller descriptions of the tempering processes, which would add very materially to the value of the book. These descriptions should be plain and simple, such as any dentist could carry out, and should deal with principles as well as facts. There is room for a handbook of this kind.

There is no greater need to-day than a good manual of pathology for dental students. An attempt has been made to supply this need in "A Handbook of Dental Pathology for Students and Practitioners," by Albert N. Blodgett, M. D. A text book that will be suitable for students in college will not be likely to meet the wants of the general practitioner.

This book comes far short of being a suitable text book, and is too meager in detail to be of much service to the practitioner. There are many expressions in the book which seem to indicate that the author is either not a practicing dentist or is not *au fait* in dental matters. We want dental books written from the dental standpoint. The chapters are not orderly in their arrangement. The chapter on "Bacteria" should have been incorporated with that on "Causes of Caries."

In answer to some published criticisms the author in a letter says, "I felt constrained to confine myself to a general statement of the facts relating to the development of the various bacterial forms, their association with the different dental diseases, etc., and refer the reader in a commendatory foot-note to the exhaustive labors of my friend, Prof. Dr. W. D. Miller of Berlin," etc., and this is just what he has not done. He does refer, briefly, to Dr. Miller, but quotes extensively from that antiquated work of Leber and Rottenstein. There should have been a more explicit account of micro-organisms, their growth and office. The student needs this, modern science demands it. The chapter on caries shows a lack of working familiarity with the subject. Leber and Rottenstein seem to be his authority, and leptothrix buccalis is apparently the only micro-organism of which he has any knowledge.

The use of the term "necrosis," in reference to the dental pulp is hardly defensible, even with the modern usage of the word. He has nothing to say of the work of micro-organisms in relation to pus. Indeed, there is but a bare mention of the word pus. He speaks of the dental groove (?) Here is a book on dental pathology, and not a word about diseases of the gums; nothing about Pyorrhœa alveolaris, and the subject of inflammations of the pulp is inadequately treated. On pages 240–1 are fifteen lines devoted to the "mucous membrane of the alveolar process," and this lucid description: "In these cases the membrane is often found thickened; it is seen to be elevated, so as to extend to a higher point upon the teeth than usual, and is brawny and elastic to the feeling." On page 101 we note Waldener for Waldeyer. The text book on dental pathology is yet to be written.

The little "Student's Manual and Hand-book for the Laboratary," by Dr. L. P. Haskell, is by a practical man, and is full of hints that will be useful to the beginner in metallurgy.

A "Practical Treatise on Artificial Crown and Bridge-work," by George Evans, is a complete manual of this most important part of the dentist's work. It is what the name indicates, a *practical* treatise. Of a necessity, it is largely a compilation. Everything of value in this line that has appeared in the dental journals is presented. We wish it could have been simplified and arranged in a somewhat more systematic order for the use of students.

It is very fully illustrated, and the dentist, whether he does much or little of this work, cannot afford to be without it. We believe this should be a department of itself, and not classified with either operative or mechanical dentistry.

"Dental Science," 2d edition, by L. C. Ingersoll, A.M., D.D.S., is at once a complete reference hand-book and dictionary combined, containing no superfluous matter. It is one of the handiest books for the office table, and once used will be frequently used.

During the past year a fifth edition of "Richardson's Mechanical Dentistry" has been published. The revival of interest in metallurgic work, consequent upon the reaction against rubber and the introduction of crown and bridge-work, has necessitated a new edition. On comparing this with the third edition of 1882, we notice the following additions: In consequence of the introduction of the gas furnace, the chapter on "Fuels" has been entirely rewritten, and many new illustrations added. The chapter on "Silver" has some new matter, of only general interest, however. In the light of modern metallurgic advancement, the chapter on "Aluminum" should have been rewritten and brought up to the times. Not a word is said about Dr. Carroll's process with aluminum. The chapter on "Impressions of the mouth" has been rewritten, some new hints, etc., added. But the greatest difference is seen in the chapter on "Crown and Bridge-work." The edition of 1882 has fifty-five pages devoted to crowns, and bridge-work is not mentioned. The edition of 1888 has 130 pages devoted to crown-work and seventy-seven pages to bridge-work.

A new edition (the twelfth) of "Harris' Principles and Practice of Dentistry," edited by Prof. Gorgas, has just appeared. We confess we do not see the *raison d'étre* of this book at the present time. There was a time when all we knew of dental science could be bound up in one book; when the office assumed the role of the college, and when the preceptor was the only lecturer. That time has passed. The tools used then should be laid away in curiosity shops. The book as now published is not in a proper shape to use as a text book, and is not voluminous enough for a cyclopœdia. It contains nothing that an intelligent dentist does not have in better shape in his library. Have we not attained a scientific position which should make us ashamed of a whole dental library in one book? It savors of the "Family Physician," but without that book's adaptation to the family needs.

The same general arrangement of the long-ago editions, and very many of the old familiar wood cuts caught our eye as we glanced over it. We turned to see if any mention was made of Dr. Black's work on the peridental membrane, but found not a word; and then to the chapter on "Caries," to see what recognition there was of modern work in this direction. It was only barely noticed. In the mechanical part it seems to be abreast of the times. We cannot recommend the purchase of this book, and we believe dental colleges should not. The profession has outgrown it.

We are anxiously looking for the new work on dental pathology, by Dr. W. D. Miller, of Berlin, which has just been announced.

Two books were published during the past year which, while not strictly dental, are nevertheless of so much value to the intelligent dentist that we desire to mention them in this connection: "Anæsthetics; Their Uses and Administration," by D. W. Buxton, M.D., B.S." This is one of the subjects about which dentists need to be more thoroughly informed than they are generally. Nitrous Oxide is treated with especial reference to dental use.

The scientific dentist will find much of interest in "Ptomaines and Leucomaines," by Vaughn and Novy. It is the only work on this subject which we have in English.

A "Compendium of Dentistry," by Jul. Parreidt, translated from the German by Louis Ottofy, D. D. S., with notes and additions by G. V. Black, M. D., D. D. S.

This book occupies a somewhat unique position in dental literature. It is well known that the average medical practitioner (in this country at least), has a very limited knowledge of oral surgery, and that his conception of dental science is but little removed from that of the laity.

Were they required as a part of their study, to familiarize themselves with the theories of dental science and technics, it would be a gain not only to the medical and dental profession, but to the general public as well. For this purpose the book was written, and the author has done his work well. Of the twelve chapters which the book contains, one is devoted to dental anatomy and physiology; eight to dental pathology, and only three to the mechanics of dentistry. Considering the purpose of the book, this is a very fair division of the subject. While writing, the author keeps constantly in mind the medical student or practitioner, and aims to give in few words the information needed without going into elaborate details. We believe it would be wise to secure its introduction, or that of a similar work, into our medical colleges. While intended primarily for the medical practitioner, it yet is so complete a manual of dental science that it will be found helpful to every dentist. Dr. Black has inserted notes in the text wherever it seemed necessary, elaborating some point, suggesting improved methods, or criticising some statement. These annotations so freely made by Dr. Black insure its accuracy and scientific standing and preclude any need of criticism or further notice on our part. On the whole the translator has been unusually happy in his use of language, as will be readily seen when comparing this with some of the other books noticed in this report.

"The Psychic Life of Micro-Organisms," by Alfred Binet, translated from the French by Thomas McCormack, is an interesting, if not an instructive monograph. We find in it a classification of the different known micro-organisms, their motory organs, organs of sense, nervous system, nutrition, etc. The monograph was written to "show that psychological phenomena begin among the very lowest classes of beings; they are met with in every form of life—the simplest cellule to the most complicated organism." We commend this publication of the Open Court Publishing Co., to the perusal of all, but especially those interested in the study of micro-organisms.

A volume on "Operative Dentistry," by Dr. E. Andrieu, of Paris, has just been published in the French language. It contains a brief introductory part on Dental Anatomy. Gives full consideration to the furnishings and apparati required for a dental office, giving illustrations of them, as well as of dental electric appliances. The sections devoted to the consideration of the cleaning of teeth, separation, filling with gold, tin, platinum, porcelain, etc., are well written, concise and profusely illustrated. Nearly all classes of dental complications, and their treatment or correction, from a simple inflammation to the most complicated dental surgical operations, are described. Extraction, pyorrhœa alveolaris, bleaching teeth, grafting teeth, consisting of implantation, transplantation and replantation, all receive their full share of attention. The subject of orthodontia is considered by the author a special branch of dentistry, and is therefore entirely omitted.

The work of Dr. Andrieu deserves special commendation. It is so far above previous publications, that we believe it to be the best volume of its character ever published in the French language.

In the perusal of the different books relating to dentistry, the committee was surprised to notice the amount of repetition indulged in. In the first place, much of that which appears in book form is originally published in the periodical literature; and if it were collected from this source and placed in compiled single publications, no objection could be raised. But in fact, many of the volumes brought to our notice contain almost identically the same matter, page for page. "Fillebrown's Operative Dentistry," "Harris' Principles and Practice of Dentistry," and "Richardson's Mechanical Dentistry," contain a large portion of the contents of "Evans' Book on Crown and Bridge Work." Much of Talbot's work on "Irregularities," may also be found in Harris' work just mentioned. Parts of Richardson's "Mechanical Dentistry," Evans' work, Talbot's work, and Harris' are also identical.

Perhaps it is impossible to avoid this, until it has been determined whether, and if so, where the line between mechanical or prosthetic and operative dentistry may be drawn; or whether orthodontia is really a part of one or the other of these main divisions. The committee recommend that the term "Orthodontia" be generally used, and that the science it embraces be considered a separate and distinct branch of dentistry.

The books mentioned in this report are those of most importance to the dentist; in addition to these, many valuable monographs, pamphlets and other publications have appeared; one of special interest, unfortunately in the German language, is Dr. Armin Rothman's work on the Patho-histology of the Dental Pulp and Periosteum.

The student is referred for a list of books published during the year to the following sources: "Transactions of the American and Southern Dental Associations," 1888, page 230-4, and the excellent monthly "Bibliography of Dental Literature," by J. Melvin Lamb, M. D.; "Dental Cosmos," every month since March, 1889.

The committee finds but little of special interest to notice in reference to periodical literature. In our own country no material change in number and character of the dental journals has taken place, excepting the relinquishment of the well-known name of *The Independent Practitioner*, and the substitution therefor of the title of *The International Dental Journal*.

During a portion of the year *The Record* was published in New York City by the Students' Society of the New York College of Dentistry.

In Canada the *Dominion Dental Journal*, under the editorial management of W. Geo. Beers, L.D.S., has appeared during the year.

In Germany the *Monatsschrift des Vereins Deutscher Zahnkünstler*, an organ devoted to mechanical dentistry, has appeared. It is published at Leipzig, and is under the management of Arthur Stolper.

The Zahnärztliche Rundschau, edited by Dr. A. Papsch, published in the German language at Innspruck, Austria, is also a new aspirant of journalistic honors.

Dentistry, like all progressive sciences, is subject to variations of progress and development; the dental journals are the exact indicators of this progress. The past year, judged by these unfailing records of history, has brought forth nothing especially new, nor has it developed any special features or recorded the substantiation of any theories. The progress of the year seems to have been one of patient study and investigation of those matters which have so recently engrossed the attention of the profession.

It is a difficult matter for the committee to treat dental science as it has been designed, or as it should be treated without encroaching on the field of some one of the papers to be read at the subsequent meetings of the session, and your committee recommend one of the following remedies:

1. Change the name of the committee to "Committee on Dental Education and Literature," or

2. Omit discussions of the committee's report, thus preventing a discussion of some practical scientific matters mentioned in the report, whose consideration appropriately should succeed the reading of some paper.

Before presenting the report to your consideration, the Chairman cannot refrain from embracing this opportunity to thank his co-members for the cordial assistance in the work of the Committee. This report is the product of the united labor of the Committee, and not, as is so often the case, the sole production of one individual.

We thank you for your kind consideration.

Louis Ottofy, Chairman,
T. L. Gilmer,
J. D. Moody,
} Committee.

DISCUSSION.

Dr. Patrick—Mr. President: I feel, sir, that it is well that we have a Committee on Dental Science and Literature. I think that it would be better if they could extend their labors from time to time, watch the current, find out who it is that furnish the pabulum, and whether or not it comes from men personally interested in the publication of certain things in some of our current works, I beg of you all to take an interest in this work. The report is an excellent one. It is the best report we have ever received. But I feel it my duty to stand before you and make a few remarks in regard to our literature, and I will tell you a plain, unvarnished story. While it may appear to you somewhat personal, upon the honor of a gentleman I have no personality in the matter. I speak for the general good of the profession, and, sir, for that reason I rise to my feet.

Some four or five years ago I was unfortunate, or, perhaps, fortunate enough to make a little appliance for regulating teeth. It was not my intention to manufacture it, but I turned it over to the S. S. White Dental Manufacturing Company; they paid me for it, and I was satisfied. I wrote a description of the possibilities of that appliance to perform the work. I wrote all of it. To my great astonishment I found that description in the *American System of Dentistry*, without the omission of a monosyllable. True, they said it was Patrick's, but the whole article was without a quotation mark. I was not consulted. There was not a word said to me about it. I wrote it for the S. S. White Dental Manufacturing Company as an advertisement. In the meantime I had improved it greatly.

Another year came around. The S. S. White Dental Manufacturing Company knew I had improved it. They wanted to get it and I would not let them have it. The description appears again in another work unchanged as pabulum for the dental profession. A few more years, and a text-book is issued on the theory and practice of dentistry, a reduplication of the Harris work, with precisely the same stereotyped thing in it. Where was it obtained? From the author of the book or from the manufacturers? Is it the manufacturer that owns text books? Am I wrong in presuming that if I find such duplicity in one instance, it will not occur in others? I have a right to conclude that it must be so. I find also in the same work, the *American System of Dentistry*, whole paragraphs, wood-cut after wood-cut taken from standard works, without even mentioning the authors' names. Is not that an outrage? Is it not time that it should be stopped? Whole paragraphs, without even a quotation mark or the credit of a wood-cut, are taken from other sources; for instance, all of Sir Charles Bell's work on the Anatomy of Expression. Are we not, by allowing such things to pass without rebuke, making ourselves a laughing stock for our brethren on the other side of the Atlantic? I rise to-day to rebuke it. Register me, Mr. President, as one among the few. I had intended to dissect that book from beginning to end, but I knew I would not receive much thanks for it, and I was too busy in other directions. I will do it though, if I live.

I had to blush while in Washington city, to see a half dozen reputable practitioners get up a quarrel on the priority of an invention for regulating teeth. The same appliance I knew had been used before their grandfathers were born.

I saw recently an English dental journal in which it was stated, in a report of the Odontological Society of Great Britain, that the largest dental library in the world contained some 320 odd volumes. I can more than triple that myself as a private individual living in Egypt. My friend, Dr. McKellops, of St. Louis, can quadruple it. He has paid more attention to collecting such works than I, and he is going to have the largest library ever exhibited. He has over 2,000 volumes now. It would astonish some to look over the wood-cuts he has, Spanish, Italian, French, German, English, etc.

FILLING PROXIMAL CAVITIES IN BICUSPIDS AND MOLARS.*

DISCUSSION OPENED BY DR. EDMUND NOYES.

Dr. Noyes—Mr. President: I must confess to less preparation than I meant to have had before addressing the Society, for I had expected to hear the paper read before discussing the subject.

There are a few points upon which I will touch briefly. These operations are among the most important and difficult to make. I think that you will agree with me that more bicuspid teeth are lost from decay than of any other class, and that this is in a very considerable degree due to the difficulty of making operations upon them that will prove permanently successful. Of course, in a brief discussion of this kind, I can only refer to a few of the more important aspects of the question.

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* The paper announced on this subject by Dr. K. B. Davis was not prepared by reason of illness.

One thing essential to these operations, is the contour of the teeth when they are finished. I mean by contour the shape of the crown of the tooth, including the filling, and I am sure you will bear me out in the assertion that vast multitudes of bicuspid and molar teeth are mutilated by the operations made upon them. The restoration as nearly as possible to an ideal contour is more important in respect to these teeth than to the incisors. It is important in relation to the recurrence of decay, to comfort in their use, and to the health of the gums between the teeth, thus preventing conditions favorable to the production of pyorrhœa alveolaris. In order to have perfect contour of such teeth when the operations are finished, it is indispensable that they should be separated to a considerable degree before the operation is attempted, either by slow wedging or by the positive and forcible use of the separator. Though there may appear to be sufficient space at the time of operating, unless the teeth are moved farther apart than their natural positions, the form of the teeth cannot be restored, for there will be no opportunity either to perfectly pack the outer portions of the filling or to finish it afterward. The finishing of a filling cannot be done without sufficient space for the passage of the file, tape or disc which is to do the work. If the natural contour be not restored such spaces will usually close up, the natural tendency of the arch being to fall together until all its stones, if I may so use the simile, touch and support each other. The teeth are brought more closely together at their necks than they were originally and recurrence of decay is favored at that point. For these reasons it seems to me impossible to exaggerate the importance of taking time and insisting that our patients shall submit to the wedging necessary for an abundance of room, so that at the conclusion of the work the teeth shall be further apart at their necks under the margin of the gum than they are near the grinding surface. If the teeth are nearly of the ideal form, all that need be done is to restore their original shape, but there are numerous instances in which by the removal of portions of the teeth toward their lingual surfaces, and by the careful shaping of the tooth before the filling is begun, it may approach more nearly the ideal form than nature had made it.

For my ideas on the subject of enamel cleavage as concerned in the formation of cavities, I am indebted to Dr. Black. It will not do to form the cavity in such a way as to leave enamel rods with only the outer ends remaining, and in many instances the simplest way to avoid this is to put the excavator in the cavity and split the enamel from within outward. It will break in the line of cleavage, and although it may look as if you were taking away much of the undercut, it is seldom that you break away anything that should remain. The final cutting of enamel should be to bevel the outer border, so that the gold may hang over the ends of the enamel rods. You have doubtless seen instances in which a three-cornered piece of enamel has broken away from the edge of the filling, showing that cleavage of enamel has not been considered in the preparation of the cavity. Whenever you see such a piece of enamel split out, it is evidence that there were a series of short enamel rods close to the edge of the filling which should have been removed.

The question of enamel cleavage should not be lost sight of in the preparation of cavities anywhere.

Another point of great importance is the necessity that the packing of gold should be directed toward the wall of a cavity. You have all seen operations in clinics, in which the attempt has been made to fill cavities by the application of force, which was not against nor even parallel with the anterior wall of the cavity. Gold ought to be packed toward the place where you want it to lie, and the shape of the instruments and direction of force must be consistent with this requirement.

You have observed a grinding surface filling in a molar, which was good everywhere, except on the anterior buccal corner. There was a little undercut which had not been filled, and the tooth decayed at that point. You have all seen buccal margins of fillings in bicuspids and molars, posterior fillings especially, that have failed for the same reason, because the gold was never packed perfectly against that wall. The perfection of this operation requires the most careful skill and utmost patience, and a thorough conscientiousness. Of course, the packing must be perfect to begin with, but unless the finishing is accurate, there will, in many instances, be a continued irritation of the gums between the teeth, which ought, after they recover from the punishment received in the work to be healthy and sound. It has always seemed to me indispensible for the perfection of this border that the gum should be crowded away so as to expose it fully and afford the opportunity of perfect vision and accurate workmanship at that point. I have never seen any method that would compare for effectiveness with that of driving an orange wood wedge between the teeth and crowding the gum far enough to clearly expose the cervical border of the filling. This can almost always be done, because the gum can be made to yield as far as decay has progressed in almost every instance, and a wedge holds the space which is required as well as a separator would, it reflects the light from the mirror sufficiently to show that margin clearly, and it protects the cavity from the access of mucus from the gum which may sometimes get under the edge of the rubber. It holds the teeth firmly and steadily against the concussion of the mallet, so that the painfulness of its application which is very considerable, is quite compensated for by the diminished pain of the operation, and the opportunity which it affords for perfect accuracy in the insertion and the trimming of the filling are of incalculable benefit in my judgment.

[TO BE CONTINUED.]

SOUTHERN ILLINOIS DENTAL SOCIETY.

PRESIDENT'S ADDRESS.

By G. W. Entsminger, D.D.S., Carbondale, Ill.

To-day we have met to fulfill an appointment made one year ago at Centralia, and while all who were there, are not with us to-day, we are glad to know that none of our number have been stricken down in death, or severe sickness. Some have removed from our bounds, and some are necessarily detained at home, but we are glad to note that others have come among us, and thus kept the ranks full. So, in the end, we shall not suffer loss in numbers, at least. On the other hand we feel assured we have gained many more than we have lost for this meeting.

It has been the sole aim of this society to do a mission work among certain ones that our great State Society has been unable to enlist, and so far the plan of local organization has worked to the satisfaction of all, but much remains yet to be done along this line. We cannot and will not be satisfied until every practitioner in dentistry is enrolled upon our register, and fully initiated into the work; or he may be exempt, if he is a member of the State Society, but we need all the help we can get to keep the ball rolling in this part of the State, and to-day let us each elect ourselves a committee of one to see that this meeting is the best we have ever had, and promise that the one next year will be still better.

Were we able to ascertain or receive an answer to a question asked the individual members of this society, as to whether he has gained or lost since uniting with this society, we most assuredly would have an answer affirming that *much* had been gained.

We have said the aim of this society was to do a mission work. The question might be asked, What is this mission work? We will answer: It is the medium by which we may all enter in and educate ourselves. It is the going after and bringing in men who have not identified themselves with any sort of dental organization. It is, in short, a lifting out of the rut those who in their own mind were doing the very best work in the most modern way. It is so easy for us all to stay away and keep out of the way of the dental societies and get into a rut.

Again: This mission is for the young practitioner who has just started in. It is his training school for greater things. It is to us, as young practitioners, a continuation of studies; and a great many more things it may be good for. But this is giving an idea of the intent of this society, and, in summing it all up, we have only to say: It fits us all for a better professional career, and it puts us on a plane that will enable us to be more competent for the prosecution of a higher grade of work in our chosen profession. This now brings us to a word that must not only be *emphasized*, but must be, and is revered by all honest men. It is the word, "*Education.*"

We are specially interested in dental education, and this does not stop or belong alone to the dentist, it must be far reaching into the community in which we live. It becomes us then to be teachers as well as doctors (as we are called). It is a duty we owe to our patrons, and it will repay us tenfold if we can only succeed as a teacher far enough to teach people to care for their teeth. And to be good teachers we must receive the necessary training. I do not claim that our society is a thorough training school, but I do claim that by entering it and doing the work that belongs to the society, we will be prompted to higher grades of practice than we would if we should enclose ourselves by our own drawn lines of self-conceit and become isolated beings of the hermit type.

I say we must be teachers, not afraid to tell our patrons that we know what is to their interest; not afraid to let them know that our work, when well done, is of more value to them than a new suit of clothes or a new bonnet; and we must teach them that operations by the best operators will *fail* sometimes, as well as the best physician will lose a case by death. A great mistake is made by men who tell their patients that a certain filling will always remain in a tooth, or a set of teeth will never break, and that they will guarantee or insure the work. This kind of teaching has been prevalent not in Southern Illinois alone, but everywhere. Such teachers and operators are beginning to get back seats, and the time is fast coming when they will sit on the fence, and not be able to get inside the door of a reputable practice. Their quackery has been a hard matter to subdue, but thank goodness, the quacks are fast disappearing and reputable men are taking their places.

Of the important issues before the dental profession to-day, is the most trying and vile scheme of the claims of the crown and bridge-work trust, which, if it gets what it is trying for, will bleed every dentist in the land. To say the best of them Josiah Bacon was a mild dose. We, as a profession, are not going to suffer any more than the public, for, of necessity, if we have to pay a license we will have to make the fee in keeping with this special license. The issue is on and the war wages hotly, and it becomes us, as a profession, as a society, as individuals, to lend our best efforts to suppress this rabble and protect our interests and the interests of the nation. Plans have been devised to this end, and most of us have had an invitation, in the shape of letter and by-laws, to enlist in this battle for the right. And now, are we ready and willing to do our part? I should like to see this society do as some other societies have done, pass resolutions and pledge their support to the DENTAL PROTECTIVE ASSOCIATION of the United States.

Another issue, which to us as a profession and to the public of this State, is the proposed *new law* or a revision of our present State law. I need not dwell on this, for every man before me knows the present law, and we all know it has done much good; but in a few points it has been a failure. The proposed new law has been carefully framed by careful men, and yet some kickers have stirred up opposition to it. I will not say from what sources they came, but you that have given any thought or attention to it know about it; and so it is with any law. It hurts one, while it may benefit *one thousand*. There are a few features of this law that are excellent, and I will say the one clause that asks us all to register annually, and pay a small fee, is a good thing, for various reasons. First, it gives us a correct list and address of our co-laborers. Secondly, it gives us a chance to know if any man has crept in and is practicing illegally. Thirdly, it gives our State Board ample means to follow up the duties of the board without sacrifice of their own money, as they have done in the past.

Another clause I like, and that is giving the board option for examining any and all applicants for license. If a man is qualified the State Board are the ones to know it; and they should have a way provided for knowing how each and every man stands. We want a high-standing profession, and if we allow the quacks with a sheepskin to come in, how are we going to raise our standard or keep the profession on an elevated plane. Gentlemen, we are in a progressive age, and our State of Illinois in other matters than dentistry is abreast with the times, and now do we want to lay low and let quackery abound even more than it has in the past? Our law has been advertised as being weak, and will it not most assuredly entice those who want to take the advantage to do so, and get in their work between meals? Again I say, we as a State, as a local society, as individuals, want to urge the passage of our new law.

There have been no excitingly new operations put forth during the past year. Some improvements no doubt have been given to the profession along the line of general practice. Implantation is growing in favor, and no doubt has come to stay, in certain localities.

Root filling is a settled fact, and a well settled fact. A man that will not practice root filling ought not to call himself a dentist. Of the filling materials, copper amalgam has been leading off in the way of attention, and we are pleased to note the claims set forth, hoping that it will prove to be even more than is claimed for it. We trust to-day we shall hear good reports from operations of this amalgam as well as other filling materials. Our executive committee have made ample provision for a variety of clinics, and we as a society should return them a vote of thanks for the excellent programme they have before us; and again we must not forget to thank our good friends from St. Louis, who have taken so much interest in our welfare, and responded to the calls as clinicians. To them we owe much; and our friends from Chicago, while they have not been so numerous as the St. Louisans, have aided us much in our infancy. To all these friends we will ever be grateful, and in the future we want to see even more of them with us, and we should make a promise that we will have a society that will be bound to attract not only from the points now represented, but from very many additional parts of the country.

Now gentlemen, I have occupied your time, and if I have uttered one word that will be of benefit to one in my hearing, then I shall be paid for my efforts.

In conclusion, the people of Carbondale are again ready to bid you welcome, and trust your visit will be remembered as a pleasant one. And I will take this opportunity to thank you as a society, for all the honors past and present which you have imposed on me, and especially for the exalted place I now occupy. With your hearty support I trust we shall make an effort to have a meeting through which we may receive some benefit.

NEBRASKA STATE DENTAL SOCIETY.

(Reported for the DENTAL REVIEW by C. N. Johnson, L.D.S., D.D.S.)

The thirteenth annual meeting of the Nebraska State Dental Society was held at Wahoo, May 21–24, 1889. It was one of the most successful in the history of the society. The papers were good, the discussions animated, and the clinics interesting. Best of all was the hearty good fellowship exhibited by every member present. Never was there a more harmonious meeting, and the sentiment existing in this society might well be emulated by many other more pretentious bodies. The little city of Wahoo did itself proud in the way of entertainment. A splendid banquet was given the visitors, and altogether the occasion was one not soon to be forgotten by those in attendance. Dr. J. J. Willey, the resident dentist, exerted himself in the interests of all, and to him is due much of the credit for the success of the meeting.

The society, during its sessions, appointed the following gentlemen as delegates to attend the International Dental Congress at Paris in September: Drs. S. H. King, A. S. Billings, and I. W. Funck.

There was also much interest taken in the Dental Protective Association and a great many of the members joined.

A committee of three was appointed to look after the prosecution of illegal practitioners in the State, and the numerous offenders who are imposing on the people of Nebraska will be promptly suppressed.

The first day was taken up mostly in routine business. At the evening session the President, Dr. H. C. Miller, introduced Dr. W. F. Roseman of Fremont, who read a paper on

SOME OF THE REQUISITES OF SUCCESS.

When called upon by the chairman of your executive committee for a paper for this meeting, and a title to the same, several suggested themselves to me; among all I take the one given at the head of this article, feeling as I do this is a vital question to each and all of us. I will now offer a few thoughts, by which, with us it is either success or failure.

Are all practitioners of dentistry with whom we are acquainted qualified to practice? If not, why not? What is a dentist and what is dentistry? Dentistry, I hold, is a specialty—I will not say of medicine, but a specialty it remains. The treatment of the eye, the ear, are specialties; even the much-abused corn-doctor is a specialist. If we go back but a few generations we find doctor-barber, blood-letter, and dentist all combined in one; as intelligence broadens each occupation or profession is classified. So in time our chosen profession sought out and found its proper channel. We now ask what are the requisites to success in this special branch. A thorough common school or academic education, a knowledge of medicine to a certain extent, and above all, the height of one's ambition should be to succeed; overcome whatever obstacles may present themselves.

A prominent writer in dental literature says: "There is no law that presumes to inquire into the actualities of the case." But should there not be? Many a young man when entering the profession is thoroughly in earnest, and while this earnestness may be commendable yet it does not insure success, simply because that earnestness is not tempered with the requirements of what dentistry really is.

Those who have long been in the harness know that our work is not that of an hour, a day, or even a life time. How often have I been asked how long it takes to learn dentistry. I invariably reply we never learn it, as there are ever and anon new fields opening to be explored. To know what success means, one should have stood near the late lamented Dean or Marshall H. Webb to realize what their elevation cost. Full well they knew when dollars came to their coffers they were earned, full value was returned. But how is it with the nondescript who goes about the country seeking whom he may devour, taking the measure of the mouth for a six or eight dollar set of teeth, very careful to secure his ducats when the measure, as he terms it, is taken. Are his returns appreciated? Not at all! But in many cases when the teeth come to the patient the patient finds he has paid dearly for what is of no value. How often it is a young man goes into an office as chore boy, which in its place is honorable enough. In a few months he is sent forth as Dr. so-and-so, dentist. Two wrongs are here done, the lesser the young man going forth thus unprepared, the greater the young man's preceptor sending him forth knowing he has not the proper qualifications.

If a student has no higher aspiration than merely to make an easy living, the sooner he seeks some other vocation the better. Those who are determined to enter our ranks, should have indelibly impressed upon them the truth that success means work—both mentally and physically. Impress upon them all things that are necessary in the field they are about to enter. We will now suppose ourselves fairly launched in the professional craft. What are its helps?

Associations are a power in this respect; the influence has been to elevate and polish the standing of every one availing himself of such advantages. Have the honor, fellow practitioners, of belonging to some dental organization, and may it not be the least honorable to belong to the Nebraska State Dental Society. What are the advantages of these meetings? They have raised the standard of dentistry from that of a mere handicraft of conceited jack-of-all-tradesmen to that of a respected, honored profession; giving honor and respect to those who are endeavoring to educate the young men—aye and women too—who are about entering our ranks. Let those who are already with us comprehend these facts and see that the best of material is used for that purpose. Some may say "I cannot afford it," or "cannot spare the time," just as if time and money should stand in the way; it is just so much added to our capital stook. In dealing with our patients, let us realize we are so doing with rational beings. A card tacked on our door announcing that for a few days we will be absent, will in the end far more than compensate for what in the meantime we have lost.

While the greater portion of our work is mechanical, let us realize that the law of mechanism is no chance law. Stand with me at one of your depots. We see a long freight train approaching; the engine now has stopped; but not so with the train: first one car stops, then another, until the whole is still. Now when the engine stopped what was to prevent the forward part of that train being telescoped? Underneath each car is a rubber spring which firmly, but gently as it were, stops each car at its proper place.

Now turn to the jaws. Now what is to hinder, when brought forcibly together, the teeth breaking as if having been struck with a hammer on an anvil. We find around each tooth a white fibrous membrane, called the Periosteum—in other words, that same rubber spring.

Go back with me a few centuries. We see a man sitting quietly holding in his hands a human skull. As he turns it from side to side you can see he is intently studying its curves and arches. That man was Michael Angelo, and from that skull he conceived the dome of that mighty structure—St. Peter's Cathedral, at Rome. Coming to later days, we find Robert Stephenson, from the thigh bone of Nature's highest work of creation, got his idea of that mighty tubular bridge which spans the St. Lawrence River. Thus, upon every side we see the results of Nature's handiwork is before us.

Mechanical principles are here used, but back of all was that greatest of all factors—brain power—and what a mighty power is mind. While we are inserting a filling we may feel it is entirely mechanical; that it is the trained muscles of the arm that is doing the work, but back of all is the guiding power of mind. And what a storehouse is the mind. We may pack and pack, yet like the proverbial omnibus, there is always room for more. If we wish to make our mental capacity of weight, we must concentrate. It was once said by Horace Greeley, the most difficult minds with which we have to combat are those of one idea. Therefore, while in religion or politics we may be liberal, professionally we must concentrate. The mind is not like a great storehouse—to be filled just so full then hold no more—but like Oliver Twist, should be calling for more. Its capacities are unbounded.

The power of mind is a fixed fact; so much so that when it ceases to go forward it retrogrades: to move forward it must have food, and where is this to be found? In our annual meetings; in the reading and discussion of such papers as have preceded this, and in our dental journals, which in their way are doing a great work in disseminating dental knowledge. Take the papers that are there published, read and re-read them until thoroughly understood. I might also mention the work of our dental colleges. Another requisite to success is failure. It should inspire us to renewed action to find the cause and know why we failed.

Honesty with our patients, and in our operations, is another great help. A few years ago I filled several cavities for a young lady of perhaps eighteen, and saw nothing more of her professionally until about two years ago, when she returned to me for further operations. I found upon conversing with her that with but one exception her teeth had since been twice filled by other operators, with the assurance that they would stand, but they did not. She further assured me that I told her her teeth would not stand at the time I filled them. I am now, with the plastics, doing what I can to save her remaining teeth, and have one of the most appreciative of patients. Honesty in practice, like honesty in many other things, will in due time bring its reward.

I might add further thoughts to what I have already written, but will bring these cursory remarks to a close, trusting that at least a portion of them may be worthy of your thoughtful consideration.

CLINICS.

Wednesday morning was devoted to clinics, upon which the supervisor reported at the afternoon session:

Dr. I. W. Funck, of Beatrice, filled a right central incisor, mesial and cutting edge cavity, using Williams' cohesive foil No. 4; first pieces unannealed. The hand mallet was used for condensing.

Dr. C. N. Johnson, Chicago, filled a left upper bicuspid, posterior proximal cavity, extending beneath the gum. The Ivory clamp and Brophy matrix were employed. The cervical portion of the cavity was filled with tin and gold, then Pack's semi-cohesive, loose-rolled cylinders, unannealed, were used till the cavity was two-thirds full, after which the cylinders were annealed. The grinding surface of the filling was covered with No. 60 foil. Hand pressure was used in starting the filling and along the margins, the hand mallet being employed for condensing the surface.

WEDNESDAY AFTERNOON.

Discussion of clinics:

Dr. F. M. Shriver, Glenwood, Iowa—I had a tooth filled in which tin and gold was used at the cervical margin. It was impacted with the Bonwill mallet, and every time the mallet was applied I experienced a severe electric shock. As the filling approached the grinding surface this lessened perceptibly, and the last layers of gold were put on without appreciable annoyance. The filling, however, failed subsequently at the point where the gold joined the tin and gold.

Dr. Johnson—I have no theory to advance as to the cause of the electric shock, but I am not at all surprised to hear that the filling failed. To condense tin and gold with the Bonwill mallet is to ignore the true principle governing the manipulation of this material. The blow is too rapid and not penetrating enough. It will chop the filling into a powder and destroy its tenacity. We need no mallet at all. Many operators have failed in the use of tin and gold because they have malleted too much. This material should be inserted by hand pressure, using deeply serrated pluggers, so that the fibers of the filling will be made to interlace. If you leave a pitted surface on the tin and gold, such as will result from the proper use of this form of instrument, you will have no difficulty in making the gold adhere to it. I have never known a filling to fail at this point.

Dr. I. W. Funck—I endorse the method of using hand pressure along the margins. Much harm is often done by pulverizing the margins with injudicious malleting.

Dr. Hill—I would like to ask Dr. Johnson why he uses the mallet at all if perfect condensation may be obtained by hand pressure? He employed the latter method till the cavity was nearly half full, and it is presumed he considered the filling sufficiently dense up to that point. If so, why use the mallet in finishing.

Dr. Johnson—It is not necessary to gain perfect density in the cervical portion of the cavity. What we most need is adaptation at this point. That is one reason why we use tin and gold, and also why we do not anneal the first pieces of gold which are added to tin and gold. A filling will often save a tooth from decay when it is quite soft. The old non-cohesive gold fillings could easily be penetrated with an excavator and yet they prevented decay. But as we approach the grinding surface we require more density to withstand the force of mastication. That is why we anneal the gold and use the mallet.

PROFESSIONAL FOLLIES.

By Dr. S. H. King, Lincoln, Neb.

To thoughtful members of a profession, whose fundamental principles rest upon the sciences, it is more or less astonishing that so many of its leaders lead into the realms of folly where ordinary good sense and reason do not sustain them—often mounting a hobby upon which they ride into notoriety.

One of the first of these that confronted me after entering the profession, was that of V-shaped separations of the teeth to prevent decay, advocated and practiced by Dr. Arthur and others. I congratulate myself that, though young and inexperienced, I was not mislead by their fallacious teaching. I could not believe that the Creator, in his infinite wisdom, had made such a mistake as those men, by their teaching and practice, implied. Many sets of comparatively good sound teeth were ruined and lost by this outrage on nature and malpractice of those men. It would seem that a reasonable application of their knowledge of dental histology would have forbidden their committing such outrages as filing and grinding through the enamel of the teeth at their most salient points, leaving the dentine without protection against the acidulous action of food, to say nothing of its exposure to the ravages of fermentation and decay. It will be remembered that this practice was not confined alone to carious teeth, but also those perfectly sound were thus treated in anticipation of caries.

Another time-wasting, tedious, and foolish operation was at that time practiced, and is by some to this day. I refer to the filling of root-canals of devitalized teeth with gold. This practice, however, was perfectly consistent with the theory of those highly æsthetic aristocrats of the profession whose motto was "gold or nothing," which was often interpreted by their patients to mean, all the gold they possessed and little or nothing in return.

That this practice has been largely superseded by the more perfect, practical, expeditious, and common-sense methods is a promising evidence of our profession's progress. So zealous were many of these all-gold devotees, and jealous of its only competing idol, amalgam, that they sought to ruin its reputation as a savior of teeth by raising the cry of its mercurial poisoning. Nothing could have been done to place this material upon the permanent and sure footing which it occupies to-day as did this false cry. For it led many a prejudiced and curious investigator, while looking for its bad qualities, to discover also its good ones.

It may be proper to remark in passing, that to Drs. Flagg, Chase and Palmer the "New Departure" advocates of about fifteen years ago, is largely due the credit for rescuing the large per cent of practitioners who had been captivated by the "gold or nothing" theory and placing them on the better and more substantial foundation of an eclectic practice.

We are familiar with the recent attempt on the part of a few members of our profession to gain notoriety by introducing the Herbst method of filling teeth with gold. For months it was the leading theme of our dental literature, and not until Dr. Herbst came to this country and attended the American Dental Association, and himself assured these men that our methods of manipulating gold were superior to his, did they cease to follow this *ignis fatuus*.

During the past five years the bridge-work craze has afflicted many of our profession. No chasm so broad or so deep, but could they find a couple of rotten piers upon which to erect a beautiful superstructure, they would bridge it over. Or, if no snags could be found for anchorage, sound teeth must yield to the drills, hammers and other machinery of these zealous bridge-builders until the chasm was spanned.

I would not be understood as condemning this class of artificial substitutes altogether. There is occasionally, but not often, a case presented in which a piece of bridge-work may be very properly inserted, and do good service. But I do emphatically condemn the indiscriminate bridging which has been the practice of some—such as setting a full denture upon four roots. I need not tell you what your good sense has already suggested: that laying the burdens of fourteen upon four superannuated, devitalized remnants of the dental family is more than tolerant nature can withstand for any considerable period. Again, the practice of drilling into two sound teeth for the purpose of getting anchorage for a piece of bridge-work should also be condemned.

Finally, as touching this question, I think the law of cleanliness and decency will sustain me in making one condemnatory assertion, to-wit: *That no piece of artificial denture more extensive than an artificial crown should be made a fixture in the oral cavity.* Had each gentleman present been called upon to remove as many of these filth-traps as the writer has—not one of which had been in position for the space of two years—I am confident there would be no dissent from this ultra rule. But it is useless to waste more words upon a practice which I trust will soon fall into innocuous desuetude.

Again, the dental profession has been standing for months with open mouth and distended optics, to see whether or not it should follow Younger, Atkinson, Ottofy, and others off into the barren fields of implantation. Implantation of dead bones into living, throbbing tissues of human flesh. And this outrage upon tolerant nature, is done also in the name of science.

Not many years ago a member of our profession reported his successful replantation of a freshly extracted molar into the flesh-crown or comb of a rooster, where it became permanently attached. As an experiment it was a success, but we never learned whether or not the bird could masticate his food better than before, neither did the experiment demonstrate any new principle, for plastic surgery has been practiced for more than three hundred years. Neither does the boring of holes into the jaw bones of living subjects and driving therein the dead, dried, diseased and discarded dental outcasts of another demonstrate any new principle. For it was long ago demonstrated that even a leaden bullet, shot from an enemy's gun, driven in the osseous structure of the human frame, poisonous though it be, would become encysted, and its presence tolerated, by the maternal kindness of dame nature. But we challenge any one of our professional brethren, who have been riding this outrageous hobby, to produce one scintilla of evidence of a vital union, resulting from this implantation folly. If these would-be leaders in prosthetic dentistry would implant appropriate models of porcelain teeth, constructed for that purpose, and claim for them only what all implanted teeth really are, to wit, mechanical substitutes of limited durability, their patients, who submit to such operations, would feel at least that they were bearing no doubly dead corpses of the dental family from other mouths. I say doubly dead, for notwithstanding these fossils have been laying in the tomb of the departed for months and perhaps years, they are, before their attempted resurrection, treated to a bath of bichloride of mercury—corrosive sublimate—a poison which no known living thing can withstand and live.

It may be a consoling fact that ours is not the only profession afflicted with follies. For example, the medical profession in many communities has recently been humiliated and disgraced by some acknowledged leading member going off after a strange god, bearing the double misnomer of *Christian Science.*

If it be christian to deceive the already deluded victims of imaginary ills into the belief that they are made whole, and with such a fulcrum impose upon the credulity of those really afflicted, with the hope that they too can be cured by such nonsensical gibberish, then we have measured the first misnomer by the wrong standard. As to the second misnomer, the *science* seems to consist wholly in the mode of raking in the shekels from the poor deluded followers.

It has been truly said that "science is a goddess who is rich in her attributes, ready to reward her worshipers, but coy in her gifts. She is generous only to those who worship at her shrine in sincerity and truth, and who supplement their prayers by continual labor and deeds."

DISCUSSION ON DR. S. H. KING'S PAPER.

Dr. Shriver—The essayist objected to bridge-work on the ground that it could not be kept clean. I take issue with him on this. If properly inserted it can be kept clean as easily as the natural teeth, and the patient should be instructed to brush it as often and as carefully as he would the natural teeth, had they remained. Bridge-work is not so uncleanly as the average rubber plate.

As to durability, time only will decide. I have put in many of them, and can almost say that I have had no failures. The work is as permanent as any other kind of artificial substitutes.

The President—Dr. King is certainly much mistaken about bridge-work. I have seen between two and three hundred cases, and I am certain the work will prove successful. We should not condemn it because we have seen failures. Gold fillings sometimes fail, and yet filling teeth with gold is not usually considered a failure.

Dr. H. T. King, Fremont—The essayist left out one folly, and that is the old folly of trying to save all pulps. As to bridge-work, I believe it is as easily kept clean, when perfectly made, as any other work we put in the mouth.

Dr. King, Lincoln—I am in favor of saving a pulp alive whenever possible. Now I have removed bridges that had been put on by the very best bridge-builders, and in regard to cleanliness, I have actually been obliged to hold my nose during the removal. The odor in some cases is unbearable. Besides this, we often have peridental inflammation resulting from irritation in wearing bridges. I advocate removable bridge-work.

Dr. Shriver—I would like to ask Dr. King if the bridges he removed were held on by open bands, or closed crowns?

Dr. King—Open bands.

Dr. Shriver—I condemn them. If we employ removable bridges, it is necessary to first cap the tooth or roots with gold, and let the bridge slide on and off the gold cap.

Dr. Whinnery, Omaha—Nearly all open bands are failures. I think there is a happy medium to be attained in the use of bridge-work, and that in certain cases it may be employed with success.

[TO BE CONTINUED.]

KENTUCKY STATE DENTAL ASSOCIATION.

The nineteenth annual meeting of the Kentucky State Dental Association, was held at the Louisville College of Dentistry, Louisville, Ky., June 4th, 5th and 6th, 1889.

From the address by President Dr. J. H. Baldwin, of Louisville, we make the following abstract:

PRESIDENT'S ADDRESS.

Gentlemen: It becomes my pleasant duty to welcome you to this, our nineteenth annual meeting. During the past year much that denotes progress in our profession has occurred. The recent joint meeting of the American and Southern Dental Associations in our city, and the deep interest manifested are indicative of a growth that is pleasant to note. The papers presented and the interest shown in the discussions were good. In attending a meeting of this kind, and coming in contact with the best men in the profession from all sections of the country, one is necessarily impressed with the importance and growth of our calling.

The disposition shown by the Association of Dental Faculties to increase the length of the college term to three years, is a move which I think we should commend and encourage. It is to our colleges that we must look for protection against the entrance of unworthy and incompetent men into our ranks, and we should help them in every possible way.

I think we have every reason to feel greatly encouraged for the future growth and elevation of our calling by the class of men who are now seeking entrance into our ranks. While we look to our colleges to give men the proper start, let us remember that it is on our associations that we must largely depend for a continuance of the good work. To this end let us make every effort to make our annual meetings of interest and profit to all who may attend.

Dr. F. M. Harris, of New Albany, Indiana, who is absent in Europe, in lieu of a paper on "Dentistry Among the Indiana White Caps," sent a letter to be read before the society. The following subjects were presented by him to the society for discussion :

ANÆSTHETICS.

At a dental meeting in Hamburg, Germany, the use of anæsthetics was extensively discussed. There is a decided tendency among the more progressive to discountenance the use of anæsthetics in simple cases of extraction. A few believe that the danger from anæsthetics is over-estimated, and they administer even chloroform without fear. The consensus of opinion held that the danger either immediate or remote, of any agent producing anæsthesia whether local or general, does not justify its application in dental surgery of a minor nature. This subject is full of interest to many, and makes apparent the fact that we are still looking for the ideal anæsthetic. I have seen nitrous oxide administered in combination with oxygen. It is maintained by some that the combination can be used without the suffocation or timidity that so often accompanies the use of nitrous oxide alone. In the cases I have witnessed it seemed to do quite well. At this writing I am not quite willing to praise it or place it along with the so-called vitalized air, but I am quite willing to watch it further. I have also witnessed the use of bromide of ethyl by some who use it exclusively, and seem to think it safe. I assisted several times in its administration, and it answered the purpose very well. If my memory serves me right several deaths occurred in America during the administration of this agent, and these unfortunate occurrences immediately following its introduction, have no doubt been instrumental in keeping it out of general use in our country. So far as I have heard of it here, it is not considered any more unsafe than other anæsthetics.

NEW IMPRESSION CUP.

I also had an opportunity to see an impression cup invented by Dr. Franken. It can be made long or short, wide or narrow. With it one may take an impression of the upper or of the lower jaw, or of both at the same time. Or, if the case is a proper one, both impressions and the bite may be taken at once. It is somewhat complex, and while it will never supersede those in general use, there are cases and places where one may accomplish with it what it would not be easy to accomplish in any other way. * * * I will not assert that the dentists of Germany, are as a whole in advance of the dentists of America, but they are a working people, and hold fast to that which is good. Dentistry here is not what it was twenty years ago, any more than it is in America. The young men who now graduate at the college in Berlin, are well educated and skillful; in that essential part of dentistry which does not deal with mechanics, they attain a thoroughness which far excels that required in many American colleges. The operating room is in charge of our countryman, Prof. Miller, and I see the students doing as we do in our colleges at home, and there is no reason why they may not come forth from its walls as well qualified to practice dentistry as those graduating in America.

CLINICS.

Dr. J. B. Alexander, of Louisville, inserted a soft cylinder gold filling in a lower molar, crown cavity, using entirely hand pressure, and the usual plain points.

Dr. G. S. Seymour, of Louisville, inserted a ribbon filling, using fine needle points for condensing the gold.

Dr. W. E. Baxter, of Frankfort, extracted teeth, using cocaine as a local anæsthetic, its operation being quite satisfactory.

Dr. B. Oscar Doyle, of Louisville, exhibited a method of making metal dies and striking up gold crowns; also using Dr. Patrick's crown machine for this purpose.

Dr. B. C. Hinckley, of Cincinnati, showed the "application of the rubber dam to posterior teeth and difficult cavities."

Dr. H. B. Tileston, of Louisville, introduced a large contour gold filling, using an engine mallet for condensing the gold.

Dr. C. G. Edwards, of Louisville, introduced a gold filling in an approximal cavity of a molar, using gold and tin at the cervical margin.

[TO BE CONTINUED.]

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M.D., D.D.S.,

ASSOCIATE EDITORS:

J. W. WASSALL, M.D., D.D.S.
J. G. REID, D.D.S.
LOUIS OTTOFY, D.D.S.
L. L. DAVIS, D.D.S.

THE ILLINOIS STATE DENTAL SOCIETY.

The twenty-fifth annual meeting of the Illinois State Dental Society was held in Quincy, May 14, 15, 16 and 17, 1889. The number present was about 175; of this number 97 were active members, and 14 new members were added to the roll during the continuance of the meeting. Several corresponding and honorary members were present from Iowa and Missouri. The recent anniversary meeting in Chicago, and the meeting of the Iowa State Dental Society, the previous week, doubtless, contributed to prevent many from being present at the quarter centennial of the society. The attendance during the whole meeting was phenomenal, as it is estimated that about 80 were present the first day, and by actual count more than 60 staid until the close of the last session. This is unusual, as generally not more than 50 arrive the first day, and on the last day of the meeting 30 or 40, at most, are present at the closing session. For purposes of comparison we present the statistics of the attendance for the past six years.

YEAR.	NO. OF ACTIVE MEMBERS.	NO. OF ACTIVE MEMBERS PRESENT.	NO. OF CORRESPONDING AND HONORARY MEMBERS PRESENT.
1883	123	69	8
1884	124	87	12
1885	126	98	11
1886	138	86	11
1887	140	85	7
1888	149	90	4
AVERAGE PER ANNUM.	133	86	9

From the above it may be seen that the attendance is growing and accessions are continually being made, so that the future growth and work of the society is assured. By adding the new members to the number of active members present, we have a total of 111 present, and from a count of the corresponding and honorary members we find that 7 were present, a little below the average for six years, but more than were present in 1887 or 1888. We find that at the Cairo meeting only 78 were present, and 12 new members were elected, which swells the total of active members present to 90. Gain over 1888, 21. This is encouraging.

THE WORK OF THE MEETING.

The President's address was short and inspiring. There was no laudation of the work of the society which was not justified by its past history. It was enthusiastically received, and when it was stated that the presiding officer had been present at every meeting since the society was organized there was a perfect storm of applause. Every one present felt that such devotion, aside from other good work done, merited the approbation given the distinguished president who had so faithfully followed the paths of duty to his profession, from the beginning.

The papers and reports will be published in our columns, and the reader may judge of their value by perusing them. The most noticeable papers were presented by Drs. Koch, Patrick and Eames, the first being historical, the second literary, and the latter scientific. Those that followed were more practical, and they will appeal to the thinking dentist and practical man. It is much to be regretted that Dr. Ames did not read his paper on Cleft Palate, as it is known that he had spent much time in its preparation and illustration. We presume it will see the light of day very shortly.

The Committee on Dental Science and Literature presented a report written by the whole committee, which is better than the one last presented, but it still fails to comprehend the scope of the work which the committee is expected to do. The report is valuable, but not satisfactory. For the guidance of the committee in the future we append the resolution creating it without further comment:

COMMITTEE ON DENTAL SCIENCE AND LITERATURE.

Resolved, That the following committee be created: A committee consisting of three members, on Dental Science and Literature, whose duty it shall be to report annually, on the first day of the annual meeting, on the progress of science and literature as appertaining to dentistry, and give a resume of all that may be new and important.

The Committee on Dental Art and Invention made a report that was neither valuable nor interesting, and for their benefit we publish below the resolution creating *it:*

COMMITTEE ON DENTAL ART AND INVENTION.

Resolved, That a committee of three, on Dental Art and Invention, whose duty it shall be to report on the first day of each annual meeting, the advances made during the year in the arts and inventions appertaining to dentistry.

The Committee on Dental Art and Invention shall exhibit the new devices and methods pertaining to the practice of dentistry, which are brought before the society, in a room specially provided for that purpose.

No creditable display was made by this committee, nor was any attempt made to comply with the spirit of the resolution creating it. We hope to see some good work done next year by the committee, as we give warning that we will be after the individual members for failure to fulfill their functions as committeemen. The clinics were generally satisfactory; very few failures to respond promptly were noted by the writer.

The Committee on Legislation made a report of work done, which elicited a lengthy discussion—good-tempered, but of little practical value. The revised law, so far as the present legislature is concerned, is dead. The discussions on the papers were fair, not lengthy, and they were generally satisfactory.

THE SOCIAL FEATURES.

The dentists and citizens of Quincy are noted for their good-will and hospitality. Dr. Thos. L. Gilmer, of the local Committee of Arrangements, was indefatigable in his efforts to serve the society and visitors. A ride on the Mississippi to Keokuk in the Gem City steamboat was heartily enjoyed by about 150 ladies and gentlemen. Supper was served on the boat. After landing at Keokuk nearly an hour was spent in climbing the hills and viewing the city by moonlight. The return journey was accomplished by 1 A. M. Everybody voted the excursion most enjoyable, as the weather was delightful, and no accident marred the pleasure of the journey. The proprietors of the "Newcomb" served a banquet to the members stopping at the house, and other invited guests. The menu was most appetizing:

MENU.

Consomme Royal, Barbacued Red Snapper, Potatoes a'la Parisienne,
Cucumber Salad, Sweet Breads with French Peas.
Cream Fritters, Cognac Sauce, Tenderloin of Beef, Mushrooms,
Bermuda Potatoes, Asparagus, Punch a'la Romaine.
Roast Tame Duck, Stuffed, Lettuce, Strawberries,
Vanilla Ice Cream, Assorted Cake, Crackers,
Cheese, Cafe Noir.

One hundred and twenty covers were laid, and ample justice having been done to the viands, the following ladies and gentlemen responded to toasts :

Dr. W. A. Stevens, "The Saddle Horses of Quincy," (a joke on a saw-buck).

Dr. W. H. Eames, "Dental Journalism."

Dr. C. A. Kitchen, "Unity and Fraternity of the Illinois State Dental Society."

Dr. Joseph Robbins, "The Relation of Practitioners of Medicine to Practitioners of Dentistry."

Dr. Kate C. Moody, "Women in Dentistry."

Rev. S. H. Dana, "The Laity."

Dr. R. N. Laurence, "The State Board of Dental Examiners, whom the State asks to do its work without compensation."

Dr. E. D. Swain, "Our Semi-Centennial."

Dr. A. W. Harlan, "The International Dental Congress, may success attend it."

Dr. G. V. Black, "The Beneficent Influence of the Illinois State Dental Society."

Dr. J. N. Crouse, "In Union there is Strength."

Dr. T. L. Gilmer, "The Gem City—Quincy."

After singing "Auld Lang Syne" the company dispersed.

This closed the public social festivities, but private hospitality was unstinted and enjoyed up to the moment of departure from the "Gem City."

OFFICERS FOR 1889–90.

President, T. W. Prichett, Whitehall ; Vice-President, Kate C. Moody, Mendota; Recording Secretary, Garrett Newkirk, Chicago; Treasurer, W. A. Stevens, Chicago; Librarian, D. M. Cattell, Chicago; Member of the Executive Committee, J. J. Jennelle, Cairo; Local Committee of Arrangements, K. B. Davis and M. H. Patten, Springfield; Supervisor of Clinics, J. G. Reid, Chicago; Board of Examiners, E. D. Swain, Chicago.

Next place of meeting, Springfield, Ill., second Tuesday in May, 1890.

ARE YOU GOING TO PARIS?

As a good many American dentists are likely to go to Paris this year to attend the Exposition incidentally, and the INTERNATIONAL DENTAL CONGRESS particularly, a few suggestions may not be out of place, as to the time necessary to spend in going and coming, the cost of the journey, and such other hints as may prove useful to the tourist who crosses the ocean for the first time.

The congress will open September first. Steamers leave Baltimore, Philadelphia, New Orleans, Montreal and Quebec, Boston and New York. Most of those who go will sail either from Montreal, Boston or New York. The American Dental Association will meet at Saratoga the first Tuesday in August. This meeting will close the afternoon of August 9th, giving ample time for any members to sail on Saturday the 10th, from New York, Boston, Philadelphia, or Montreal.

Steamers of the Anchor, National, Cunard, Transatlantic, and North German Lloyd lines will sail from New York on that day. A steamer of the Cunard line will sail from Boston, and one of the Allen line steamers will sail from Montreal. The following Tuesday a Guion line steamer may be taken, and on Wednesday and Thursday, White Star, Red Star, Hamburg, North German Lloyd, State, and Amsterdam and Rotterdam line steamers will depart. To one who goes on Saturday, August 10, more inducements will be offered than earlier or later. Special rates may be secured for that day from New York. The fare will range from $50 to $120, going, or return tickets may be had from $90 to $200, all first-class, the only difference being in location of state rooms and the number of persons occupying them. Inside rooms are always a trifle cheaper than similar outside rooms. When two persons occupy a three-berth room they will have to pay extra for it. Our advice is, to one who has never been over, to take a steamer for Liverpool and return from Antwerp, Rotterdam, Amsterdam, Bremen or Hamburg. The cost of railway travel will be saved one way from Liverpool to either of the places named. The journey may be reversed by sailing for a Belgian, Dutch, or German port, and coming home by the French line from Havre, or taking an English steamer from Glasgow, Liverpool or London.

COST OF THE TRIP.

Steamer from New York to Bremen or Hamburg, for one adult,	$ 80
Expenses on the steamer, fees, etc	10
Expenses on land for 30 days, including second-class railway tickets from Hamburg via Berlin, Dresden, Cologne, Brussels, Paris, London and Southampton, or Liverpool	180
Ticket to New York	80
Expenses on steamer, fees, etc	10
Total	$360

Time going and coming about 18 to 20 days.

This will cover all the necessary expenses from New York to New York. The writer can do it comfortably for $300.

By taking a ticket on an Anchor or State line steamer $60 can be saved on the cost of the tickets. In going by the Red Star line or the Amsterdam line and returning by the Inman or White Star lines from Liverpool, a saving of $30 will be effected.

This is written for those who wish to economize and not for one to whom money is no object.

By writing to Thos. Cook & Son, 261 Broadway, New York, or E. M. Jenkins, New York, they will furnish tickets, before you leave New York, by water and rail for the whole journey and tickets for your meals in hotels wherever you stop. The hotel coupons will cost $2, $3, or $4 per day, just as you choose. These coupons call for a room and two meals per day.

If you do not speak French or German it will cost about $1 per day more than we here estimate, on the Continent. We advise the taking of at least $100 more than you expect to spend, to guard against accidents or illness.

Buy a letter of credit, so you can draw money when and where you please. Purchase $20 or $30 of English, Dutch, French or German money to carry in your pocket, so you will have something to spend when you land. Carry a cake of soap with you on the Continent, at least. Take plenty of old worn clothing to lie on deck with, including a traveling rug or blanket. Buy Cassell's Pocket Guide to Europe or the Satchel Guide for 1889. Study the maps and plans and decide what you wish to see before you start. Badeker's Paris and his guide to London will more than pay for the small cost (about $2) if they are well studied. Articles not intended for personal use, will have to be paid for when you arrive in

New York at the usual import duty. You can attend the Congress without spending thirty days on land, but it will pay you to see something of the world while you are across the ocean and we strongly advise you to spend at least a week in London and a week in Paris in addition to the week of the Congress. You could go as late as the 21st or 22d of August and arrive in time for the opening and return two days after the close of the Congress, the whole time from New York back to New York only occupying twenty-two or twenty-three days. We advise a longer stay.

Post-Graduate Instruction in Prosthetic Dentistry.

The above-named school has been established by Dr. L. P. Haskell, president; Dr. M. Stout, secretary and treasurer, and Dr. G. F. Schaffer, superintendent. In response to a letter of inquiry by the editor to Dr. Haskell, he has written the following as being among the objects of the school:

"In reply to your letter of inquiry, I will say that the school is strictly one of 'technics,' as our circular indicates. There will be no lecture courses, no *classes*; but the practitioner can come at any time and spend what time he can spare to obtain the practical knowledge of prosthetic dentistry, in which so many are deficient—at least in metal-work—including crown and bridge-work. I shall give the students my personal attention. Crown and bridge-work will receive the personal attention of one of the best instructors in the city.

"The school was the outcome of the establishment of a large laboratory for doing first-class work for the profession, affording an opportunity for seeing practical cases made according to the highest standard, and of all kinds of work. I will be pleased to have you call and see our arrangements. Yours truly, L. P. Haskell."

Dr. Haskell's long experience as a practical worker in all the departments of prosthetic dentistry and his career as a teacher in dental colleges, fits him in a peculiar manner to be successful in this undertaking. We wish the school abundant success.

The Discovery of the Cohesive Property of Gold.

The Journal of the British Dental Association, in its obituary notice of the late Mr. Robert Hogue, of Edinburg, says: "In the treatment of decayed teeth he was very skillful and used gold on the cohesive principle, about the year 1850, many years before Arthur, of Philadelphia, laid claim to the discovery. The late Dr. A. Wescott, of Syracuse, N. Y., laid claim to the discovery of the cohesive property of gold about 1843-4. Dr. James Leslie, of Cincinnati, Ohio, has laid claim to the above discovery, dating his discovery back to 1838. Dr. W. H. Dwinelle, of New York, has claimed the honor of this discovery in connection with A. J. Watts, of crystal gold fame. None of the discoverers announced to the world this fact, until after Dr. Robert Arthur, of Philadelphia, later of Baltimore, had published his treatise on "Adhesive Gold Foil," 1857.

The discoverer of any new thing, process, or property who first makes public his discovery by publication, or otherwise, so that it becomes the property of the public, is the one to whom the credit should be awarded. No published records, or record of any meeting has come to light where any of the alleged discoverers of the cohesive property of gold made this public announcement, until after Arthur's book was published. We think and believe that Arthur is entitled to the first mention in this connection, unless some stray leaflet, pamphlet, book or other record is produced which will give indisputable proof that it out-dates the publication of Arthur's work.

KENTUCKY STATE DENTAL ASSOCIATION.

The nineteenth annual meeting of this society was held in Louisville, June 4, 5 and 6. While the meeting was not largely attended, it proved interesting, and certainly profitable to many. Unfortunately many who had been assigned positions on the programme failed to comply. It is contemplated to change the time of meeting so as to have it follow the commencement exercises of the Louisville College of Dentistry, thus enabling the students, who have just graduated, to become members of the association.

The matter of the Dental Protective Association was quite earnestly discussed, and many have joined the association.

The Kentucky State Board of Dental Examiners was also in session and examined four candidates. The association has a membership of over thirty. The following officers were elected for the ensuing year: President, J. W. Wallace; Vice-President, W. E. Baxter; Secretary, J. H. Baldwin; Treasurer, J. F. Canine. Louisville was selected as the next place of meeting.

The Kentucky dentists are a good lot of men, and the DENTAL REVIEW wishes them abundant success.

DOMESTIC CORRESPONDENCE.

In Bridging Teeth in Cases of Pyorrhœa do we Invite Bacteria?

To the Editor of The Dental Review:

Dear Sir:—The above question suggests itself to my mind after the perusal of a communication in the *International Dental Journal* signed by Dr. E. A. Bogue. From the tenor of his letter, which denounces me for having so treated three teeth in the mouth of Dr. Andrews, it is evident that Doctor Bogue would reply to the above affirmatively. But in so doing I venture to state as my belief that the doctor affirms where he has had little if any opportunity to judge. If he has never seen teeth thus united, it is plain that he can form but a theoretical opinion. If he has seen—but that is out of the question, else he would not have written the letter.

He says: "In view of some late lectures on the germ theory of dental caries, I should like to ask you if the operator who implanted a tooth for Doctor Chas. Andrews, and illustrated his operation in the *Dental Cosmos*, showing the solid gold bar running across the tops of three adjoining teeth, did not make a fine nest for the cultivation of bacteria?"

In replying to this, I may answer my own question at the head of this communication. At the outset let me protest against the looseness of expression in the above sentence. In scientific matters, more especially when criticising the possible errors of others, one should be most exact in terms used. When one reads of "nests" one not unnaturally thinks of the animal kingdom. The fish, the foul, the quadruped, and the biped, may all be said to propagate in "nests"; but my education has been neglected if this is true of plant life. Bacteria being plant, and not animal, taking the doctor literally it would be obviously correct to deny that any "nests" for bacteria have been constructed in the mouth of Doctor Andrews or elsewhere. But this is only a friendly aside, as it were, and is not advanced as argument. However inaptly expressed, it is evident enough that the meaning is, that, to cut away sound teeth thus forming grooves across the cutting edges, subsequently uniting two or more teeth by bars and filling, is offering favorable opportunity for tooth destruction by bacteria. Let us then face the question from that standpoint. What is the germ theory? To quote from one of the recent lectures alluded to (Allan) I might tersely state it to be as follows: "Whenever, either between the teeth, in sulci or pockets, through faulty development, a lodgment can be had for food products, a miniature acid manufactory is set up. The acid freed in this decomposes at once that portion of the tooth with which it comes in contact, uniting with its lime salts and forming new combinations, and as the decalcification advances bacteria follow, throwing out in their growth new waste products in the form of lactic acid. Chemists tell us that nascent acids, those just formed, are most powerful in seeking new affinities; and here the acid is continually being eliminated and in its fresh condition brought in contact with the lime salts of the teeth."

The fundamental point in this is the possibility of a lodgment and retention of food. When Doctor Bogue speaks of "nests" this is what he is thinking of, that the operation under consideration affords a special abutment about which food is likely to become packed and so "promote" (to use another of his words) the train of corrolary occurences, the final result of which is caries. And that is why I consider that this supposition on his part, is sufficient proof that he has not seen teeth so united.

It is evident to any dentist's mind that teeth in a normal healthy condition would not be so treated. Doctor Andrews' was a rare case. Where I have most often performed the operation (following the lead by the way of Doctor Andrews who orignated it, thus making his mouth but a fair field for experimentation), has been in the treatment of Pyorrhœa, and even then only when the ravages of the disease had loosened the teeth. The teeth then, being loose, it is but reasonable to suppose that, the safeguard erected by nature which we term the "knuckle," or actual contact of the crowns, being more than inoperative, the process of mastication forces food between the teeth, where it is lodged; held more securely from the fact that calculus has roughened the surfaces. If a simple groove be cut in the edge of a single tooth, and a perfect gold filling be placed, then all edges smooth and polished, would Doctor Bogue maintain that the liability to attack from bacteria has been thereby increased? Probably not. Would not the same hold with two, or with three teeth? Probably. The only point of difference then between filling and bridging is the fact that in the latter case the filling passes continuously from one tooth to the next, and here is the "nest" presumably. But the fact is that the presumption is incorrect. The ideal contour proximal filling, is admitted to be that in which contact is absolute at the crown, with a V shaped space existing toward the gum. If this contact is so good that nothing passes between the teeth, the dentist is said to be a good operator. In the bridge we get this contact, and a little more, since we have continuity. Therefore in masticating it is impossible that food could be forced between the teeth. Simple contours would not accomplish this while the teeth are loose. *The bridge being a continous gold filling, flush with the enamel at all points, and highly polished at every part, especially where it passes across spaces, not only does not offer "nests" or "pockets" for debris, but on the contrary operates to prevent the ingress of food stuffs.* This is not only true in theory, but teeth so treated, *as long as two years ago,* are to-day in a *better state of preservation and cleanliness* than they had been for years previous to treatment. This can be shown in a large number of mouths ; it is well known that as a rule such patients are anything but cleanly. Nevertheless in all the cases treated by myself and others, in no one case has decay supervened.

Whether it be that uncleanliness produces Pyorrhœa, or simply "promotes" it, it is worthy of note that a large number of cases have been cured by bringing the patients to an appreciation of hygiene ; of course after treatment has been faithfully attended to and so far from the bridge "promoting" bacteria, it has been used for that for which it was originated, viz : *to make cleanliness possible,* as it is not where teeth are very loose. Moreover not only have the bacteria of caries not appeared as a result of these operations, but the bacteria of Pyorrhœa, if there be a special coccus as some claim, have disappeared by germicidal after-treatment.

In concluding let me state that in the special case of Dr. Andrews there was manifestly no danger, since the patient is not only a dentist, but his mouth is sweet enough and clean enough to kiss at all hours. Dr. Bogue may salute him without the least fear.

Yours respectfully, R. OTTOLENGUI.
115 Madison Ave., N. Y., May 30th, 1889.

BOSTON, May 21, 1889.

To the Editor of the Dental Review :

DEAR SIR—The writer of the review of my book questions the statement on page 11. "Though not absolutely peculiar to the teeth," and "asks" for information. I enclose the authority upon which we based our statement, and I must say it seems to me ample. Cleavage of enamel is so fully treated by Tomes in his "Dental Anatomy" that I considered it needed only a mention as a point of common knowledge. I now think it would have been better to have mentioned it in connection with the preparation of cavities. Yours very truly, THOS. FILLEBROWN.

"Calcified teeth * * * are composed of one or more structures which are in a great measure peculiar to the teeth (although what is to all intents and purposes dentine, is to be found in the skeletons and in the dermal appendages of some *fish*, and other exceptions might be found to the *absolute* accuracy of the statement), and are hence called "dental tissues." "TOMES."

"In a few instances among the vertebrate animals the hardening materials exist in a much smaller proportion and the animal basis is albuminous, the teeth here agree in both chemical and physical qualities with bone." "OWEN."

"Enamel, which under all its conditions bears a close analogy with dentine, is hardly distinguishable from that tissue in the teeth of many fishes. "OWEN."

"In the teeth of fishes there are several intermediate stages of gradations which link enamel with dentine, as the dentine in most fishes passes gradually into bone." "OWEN."

REVIEWS AND ABSTRACTS.

DENTAL MEDICINE. A MANUAL OF DENTAL MATERIA MEDICA AND THERAPEUTICS. By F. J. S. Gorgas, A. M., M. D., D. D. S. Third Edition, Revised and Enlarged. Philadelphia, P. Blakiston, Son & Co., 1889. Chicago, W. T. Keener. Price, Cloth, $3.50. Pages, 446.

This handsome volume, of convenient shape, is the latest effort of the industrious editor of "Harris' Principles and Practice." From a comparison with the second edition we find much new matter added, which constitutes the volume, the only really available text-book on dental medicines in the English language. The work of Stocken, third edition, we presume must be out of print; if it is not, on account of the rapid strides of dental therapeutics in the past years, it is out of date. The work of Gorgas, therefore, is the only dental text-book that students can refer to for an aid in the study of dental therapeutics. If we felt inclined to criticise this edition it would be to the effect that the author has not shown in its pages that he is an experimental therapeutist. His work of compiling has been well done, and it is very nearly up to date, even a portion of the admirable paper of Dr. G. V. Black, read at the anniversary meeting of the Chicago Dental Society, appears in the appendix. The appendix contains several of the new drugs which are still on trial in dental, as well as medical practice. In the body of the work the article on cocaine is scarcely as full as it might have been, as it does not give the references to several very elaborate papers which have appeared in English, French and American journals. Arsenic is not treated with that fullness of detail which its importance in dental medicine demands. The author does not refer in sufficiently strong terms of condemnation of the practice of obtunding dentine by the use of this agent. It is unjustifiable to use it for this purpose at all, is the reviewer's opinion. It is likewise a positively dangerous agent to use in the deciduous teeth. It should not be used in such teeth at all. There are other agents less dangerous that should be advised. We merely call the attention of the author to these points because students in and out of college are the readers of text-books, and not the everyday practitioners. The volume, as it stands, is not uninteresting, and the therapeutic methods in general are sound, and fairly represent the advanced methods of intelligent dental practice in the United States at the present time.

BOOKS RECEIVED.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE YEARS 1886-87. Nathaniel H. R. Dawson, Commissioner, Washington: Government Printing Office, 1888.

HOME GYMNASTICS—FOR THE WELL AND THE SICK. Edited by E. Angerstein, M. D., and G. Eckler. Boston and New York: Houghton, Mifflin & Co., 1889.

PAMPHLETS RECEIVED.

OUR TEETH. A familiar treatise. Published by the Illinois State Dental Society, 1889. This pamphlet is intended for distribution by the dentist to his patients. Dentists desiring such a work can order them by the hundred, from the secretary, at cost of publication.

PRACTICAL NOTES.

AN EASY AND QUICK METHOD OF MAKING A COUNTER-DIE FOR SWAGING CUSPS FOR GOLD CROWNS.

By Dr. C. H. Robinson, Wabasha, Minn.

Make of sheet brass, using hard solder, a cup three-fourths of an inch in diameter and half an inch deep, having a spur on one side by means of which it can be held in a pair of pliers; fill it with Melotte's fusible metal. Select a natural or artificial tooth for a model; fill the soft rubber ring that comes with Melotte's Moldine with plaster, and invest the tooth so that the cusps project out of the plaster as far as it is desired to copy them; when dry remove the rubber ring. Melt the metal in the cup, and just before it hardens in cooling, press the cusps of the tooth into it. The surplus metal will run over the sides of the cup, and a sharp and perfect counter-model will be secured, into which the gold plate can be swaged after the method of the S.S.W. die-plate, using the lead hubs or bullets. I also use for this purpose sheet lead 1/16 of an inch thick, cut in strips 2½ inches long and ¼ to ½ an inch wide, one end of which is folded upon itself two or three times letter S fashion, the other end being long enough to hold it by. As it becomes flattened in swaging, it can be folded back and forth over the gold plate.

By having one or more of these cups and a sufficient selection of teeth already invested in plaster, it is but a moment's work to select the size desired, and make the counter-die. Should it lose its finer lines in swaging, it can be remelted and an exact duplicate obtained in less than a minute.

USE OF SOLUBLE MEDICATED GELATIN IN FISTULÆ AND AROUND THE ROOTS OF TEETH.

By W. B. Ames, D. D. S., Chicago, Ill.

Upon having my attention called to the efficacy of soluble medicated gelatin in the treatment of inflamed and suppurating mucous surfaces in different portions of the body it appeared that it might be employed to advantage in the treatment of fistulæ and pockets about the roots of teeth. After a thorough trial I am convinced that it is one of the most convenient, positive, painless, and cleanly methods of medication, in these conditions, that we have.

The preparations used are those of Dr. Chas. L. Mitchell, of 1016 Cherry street, Philadelphia, in which any medication desired can be obtained. With the anodynes, astringents, coagulants, alteratives, antiseptics, stimulants, sedatives, etc., available in Dr. Mitchell's list of preparations the demand in any condition can be met, but, inasmuch as the conditions for which we most often use a remedy in this form are those in which a mildly astringent coagulant action is desired, a small variety of preparations can be used in the treatment of all conditions presented. The pencils or bougies medicated with sulphate of zinc, or sulphate of zinc with carbolic acid, with an anodyne if desirable, can be used to advantage in most fistulæ and pockets about the roots of teeth, the facility with which they can be placed in contact with the diseased tissue being their chief recommendation. For fistulæ, a point of the proper length and size can be cut from the side of a pencil or bougie which, on account of its flexibility, can be readily passed to the extreme depth of the tract. For pockets about the roots of teeth a shaving can be taken from the surface of a pencil or bougie, which will be found to be especially adapted to deep and tortuous pockets. The form best suited for this purpose is the intra-uterine pencil, which is three inches long and three six-tenths inches in diameter. Small lachrymal bougies and fistulæ crayons are made, but by cutting the points from the large pencils the cost is reduced very materially.

A Few Don'ts on Prosthetic Dentistry—For Beginners.

By W. Mitchell, D. D. S., London, Eng.

Don't think that prosthetic dentistry is *infra dig*, or requires less brains or capacity in its perfection than operative dentistry; for it is replete with details, the omission of any one of which means a modified success. A higher order of mechanical skill, greater artistic perception, and nearly as delicate, manipulative dexterity is required as for any operative process.

Don't think you are a dentist because you possess a diploma and can put in a respectable filling, for unless you can decide upon the best method of restoring a defective natural denture, make and adjust the required appliance, you are only half entitled to your name or degree.

Don't give a hurried opinion. A careful study of cases will be of no less benefit to the dentist than to the patient.

Don't fail to study the merits and demerits of various methods and means; then endeavor to cultivate, if you do not already possess the capacity, to press into your service what is best adapted to the requirements of the case under consideration.

Don't think any source so lowly but a new and good idea may be found there.

Don't think the loudest opinions necessarily contain the greatest wisdom; refined instrumental solos are rarely played upon bass drums.

Don't think that even a good impression and antagonizing bite are the only essentials to success.

Don't forget to note the peculiarities of temperament, habit, nourishment, contour of figure, facial angle, and hereditary type, if peculiar, for on these, in no small degree, depends the prognosis of the case.

Don't think, because you can get a plate to stay in the mouth, and that your patient "can get along with it," that you have obtained the ultimatum of success. Patients can, and very frequently do, put up with many apologies for dental art, owing principally to their own pride, and ignorance of the possibilities of dentistry, combined in many cases with the latter quality and incapacity in their professional attendant.

Don't think because the first attempt has not resulted in success the second may not; see if there is not some preventable oversight that is the cause of failure; turn your failures to account and avoid the rock that stranded you, and tell your patient who may be *impatient*, as much of your time as his is involved in the issue, and that you are as interested in the ultimate success as is he.

Don't consider a case "good enough" unless it represents your best efforts.

Don't think that in all full cases continuous gum is the best, and vulcanite the worst base for an artificial denture.

Don't think that a thick, cumbrous plate necessarily means a strong one, practically in vulcanite. The reverse of this is true.

Don't in vulcanizing try to see how quickly you can raise the heat to 320°, especially when vulcanizing heavy restorations in lower cases, as a week and porous piece will be the inevitable result.

Don't conclude because a patient has an inflamed mouth and is wearing a vulcanite plate that it is the cause of the trouble. The same state of affairs may exist under any other base, a bad fit and faulty articulation may have more to do with the irritation than any physical defects in the material.

Don't think that an aluminum plate, with vulcanite attachment, is anything but a mechanical combination, for it is not ; quite different in this respect is gold and vulcanite.

Don't forget that pure tin, with or without vulcanite attachment, makes one of the best bases for full lower plates extant.

Don't use silver for artificial dentures—dental alloy, a combination of silver and platinum, is much better, just as easy to work, and does not tarnish in use.

Don't use platinum, except in continuous gum work, for any supposed virtues it may possess ; it has none not possessed by dental alloy.

Don't use wires to retain partial cases, they only spring around the necks of the natural teeth and ultimately destroy them ; wires are an abomination and a subterfuge of incompetency.

Don't be afraid to use a wide band, but see that it fits perfectly the largest part of the crown of the supporting tooth, and does not impinge upon the gum anywhere, but leaves a clear space at that point to permit the free circulation of the oral fluids, and thereby prevent the retention of any deleterious substance.

Don't fail to trim your impression or model as may be required to equalize the pressure in the finished case.

Don't use springs unless absolutely necessary, for they in most cases promote absorption of the alveolar ridge. They are chiefly used as a prophylactic against the effects of bad models.

Don't use gum sections where plain teeth can be used. Better results are attainable with the latter than with the former.

Don't entirely discard the vacuum chamber—where judiciously used it is a valuable adjunct to both dentist and patient.

Don't make artificial teeth quite as long in full cases as the natural ones would be. A slight shortening is frequently a great benefit ; decreasing the leverage and securing greater utility.

Don't let the six anterior teeth touch, except in a perfectly square bite.

Don't see how near you can imitate a row of shirt buttons in arranging an artificial denture. In this respect too many dentists are merely automatic mechanics. Versatility denotes the artist.

Don't think because your arrangement on the articulator was

"O K," no change will be needed when the case is tried in the mouth. It is very rarely that some slight alteration is not required. In this, as in many things, the little details must not be overlooked.

Don't use teeth that are too light; they had better be dark than too light. Harmony, and not contrasts, are what we more frequently find in nature.

Don't use single plate teeth except in small partial cases; in full cases the vulcanite attachment to the metal case is much the better and more cleanly.

Don't trim your plate too short above the cuspids, allow it to extend to the reflexure of the lip and gum; this will, to a great extent, restore the depression caused by the loss of the cuspid roots.

Don't place too much reliance in your patient's description of what their teeth were; who ever heard of an edentulous person but had "beautiful small white teeth, and very regular."

MEMORANDA.

Dr. C. S. Smith is the new Secretary of the Illinois State Board of Dental Examiners.

Dr. Munn, of Iowa, has invented a very complete disc carrier. It was exhibited at the Illinois meeting.

The Missouri State Dental Association will hold its next meeting at Pertle Springs near Warrensburg, Mo.

W. A. Courtney, D. D. S., of Hancock, Mich., was recently married to Miss Jennie A. Horton, of Port Huron.

The call for the International Dental Congress has been published in nearly all of the European dental journals.

If you have not attended a State Society meeting this year, make an effort to be present at Saratoga or Galveston, or both.

The four dental societies in Chicago have a combined membership exceeding 175. Will our envious neighbors make a note of this?

After having suspended publication for a year, the *Monatsschrift des Vereins Deutscher Zahnkünstler*, has again made its appearance.

About three hundred dentists have become members of the Illinois State Dental Society during the first quarter century of its existence.

Dr. B. S. Byrnes, of Memphis, has invented and placed on the market an engine mallet. It can be attached to any hand-piece. The price is $15.00.

Dr. Adolph Petermann, of Frankfort-on-the-Main, Germany, has received the royal order of the crown of the fourth class from his Majesty the Emperor of Germany.

The medical profession are seriously thinking that antipyrine is likely to become as dangerous as cocaine, by reason of its habitual use by those who do not thoroughly understand its dangers.

Only seven members of the Illinois State Dental Society have retained continuous membership. They are Geo. H. Cushing, J. N. Crouse, W. W. Ormsbee, C. A. Kitchen, A. E. Brown, E. Honsinger and A. W. Freeman.

What do you think of an International Dental Congress in 1892, in the great Auditorium building of Chicago? That's what it's coming to. Chicago will then be the first city on the western continent; second only in population.

The eighth annual anniversary dinner of the New Orleans Odontological Society, was participated in and hospitably enjoyed by the members of the society and their guests at Washington Hotel, Milneburg, near New Orleans, Wednesday evening, June 12, 1889.

Full reports of implantation cases are now in order. Dr. H. A. Smith, of Cincinnati, Ohio, chairman of the section on physiology and etiology of the American Dental Association, is collecting statistics. Every dentist who has performed the operation should report to him.

Look at your last transactions of the American Dental Association and see what sections you belong to. Send an essay, a short paper, or suggestion to the chairman or secretary of the respective sections. Section work in the association ought to be abolished unless every member is to a greater or less degree a contributor.

The University of Michigan dental department, has graduated 322 persons since its establishment, but owing to the imperfect list of addresses, not more than two-thirds of that number can be reached by mail. Will graduates who have not received invitations to the Alumni reunion this month, please send their post-office address to L. L. Davis, 524 Van Buren St., Chicago, Ill.

Pat Finnigin—"Did yez hear, O'Rourke, since the Cronin murther, the Oirish are blamed for everything? Ducther Flaherty, the dintist, says wan av us is to blame for the rottin of the tathe."

O'Rourke—"How's that?"

Finnigin—"They say the dacayen of the tathe is caused by Mike Robe."

One of our esteemed correspondents after reading the report of the Anniversary Meeting in Chicago wrote as follows: "It would be a treat to live in such a place—how different it is here in that respect, apathy and incapacity all around owing chiefly to the smothering of ideas and the intense conventional respectability of the contingent. How sad to think the death rate of our place is only 16 per 1,000."

The *Journal of the American Medical Association* issued an edition numbering more than 70,000, May 25, 1889. The above journal is one of our most valued exchanges; and the management by such enterprise shows itself full of business acumen, and the reading pages are evidence on the part of the editorial staff that the *Journal* is in the front rank as regards the literary make-up. We wish the *Journal* unbounded prosperity.

The time of meeting of the International Dental Congress has been so arranged as to give ample time for travel from Saratoga Springs, N. Y., to Paris, France.

This was done with special reference to the convenience of Americans who intend to go to Paris after the meeting of the American Dental Association. The dentists of the west will find this a special convenience. The executive committee of the American Dental Association ought to make railroad arrangements to enable all dentists from the south and west to visit New York or Europe after the meeting at Saratoga Springs.

CORRECTION.

Dear Dr. Harlan:—In my article upon "Annealing Gold" in the April number of THE DENTAL REVIEW, I say, or am made to say, that the tray upon which I anneal is of iron, I should have said German silver, for that is much better adapted to the purpose, inasmuch as it does not so readily oxidize, nor will it contaminate the foil. In answer to inquiries, allow me also to say that the annealing apparatus, for either gas or alcohol, may be obtained of the Buffalo Dental Manufacturing Co. Truly yours,

Buffalo, N. Y., June 1, 1889. W. C. BARRETT.

TIN AND GOLD.

Mr. A. J. Woodhouse, of London, says that he became a student of dentistry in 1842, and at that time his preceptor, Mr. Thos. Sheffield, of Exeter, was using tin and gold as a filling for teeth, and had at that date been using it for several years.

The Minnesota State Board of Dental Examiners will convene in regular session at the Hotel St. Louis, Duluth, at 9 A. M. Monday, July 8, 1889.

H. A. KNIGHT, Secretary,
608 Nicollet Ave., Minneapolis, Minn.

IMPLANTATION DATA DESIRED.

In order to obtain and place on record a consensus of professional experience and judgment in regard to *Dental Implantation* it is desired that dentists in this and foreign countries will kindly transmit to the Chairman of Section VI of the American Dental Association facts called for under the following inquiries:

1. Date of each operation. Sex, age, temperament and physical condition of the patient.
2. Description of the implanted tooth; date of its extraction; condition of the peridental membrane; preparation of the root by trimming or shortening; filling material used in the root canal.
3. Antiseptics used in preserving the tooth for implantation and during the operation; also the antiseptic washes prescribed after the operation.
4. Instruments employed in the preparation of the artificial socket and the method of sterilizing same.
5. Appliance used for retaining in place the implanted tooth and the length of time employed.
6. Subsequent history of each case to date of report or up to the time when last seen or heard from.
7. In cases which have failed specify minutely the causes of failure together with an exact description of the appearance of the implanted tooth after extraction.
8. Total number of teeth implanted; number deemed successful and the number known to have failed.

It is earnestly requested that facts of the kind above indicated shall be sent before the first of July next to Dr. H. A. Smith, 128 Garfield Place, Cincinnati, O.

Cincinnati, O., May 20, 1889.

THE DENTAL PROTECTIVE ASSOCIATION.

Did you receive the circular and By-Laws recently mailed to every dentist in the United States? If not, or if you have mislaid them, I will gladly send you others. Have you read the circular? If not, why not? If you have read it have you signed and sent By-Laws, with membership fee, $10.00, as requested? If not, will you not do so at once? Also send us history of any cases you have or know of as described in the circular. We have already received descriptions of many new cases, which will add valuable testimony in our favor in the coming contests. Many have already joined the association but we want many more.

The amount of money required of each one is very small. The fee, however, will remain at $10.00 till a certain number is obtained; after that it will be but just and in accord with similar organizations that those who join shall pay a larger membership fee.

We feel sure, speaking from the advice of our attorneys, Messrs. Offield & Towle, that we will eventually be successful against all the claims of the Tooth Crown Co. Many are asking if it will not cost more to settle with that company if we *should* fail. We answer no, as the rates of licenses and royalty have already been established, and such rates will be held as legal in cases of past infringements and future licenses. But we cannot fail if dentists pull together. Will you help or hinder by holding back? Let us hear from you.

Yours Truly, J. N. CROUSE,
2231 Prairie Avenue, Chicago. Chairman.

COLORADO STATE DENTAL SOCIETY.

PUEBLO, COLO., May 17, 1889.

The Colorado State Dental Society will hold its third annual meeting in Denver, commencing June 26th. The State Dental Examining Board will be in session there at the same time. J. N. CHIPLEY, Cor. Sec'y.

OFFICERS OF THE NEBRASKA STATE DENTAL SOCIETY, 1889.

President, Dr. H. J. Cole, Norfolk; Vice-President, Dr. W. W. Vance, Kearney; Rec. Secretary, Dr. I. W. Funck, Beatrice; Cor. Secretary, Dr. A. S. Billings, Omaha; Treasurer, Dr. A. W. Nason, Omaha.

Omaha was selected as the next place of meeting.

DELEGATES TO THE INTERNATIONAL DENTAL CONGRESS.

The Illinois State Dental Society appointed the following named gentlemen to represent it at Paris this summer: Geo. H. Cushing, W. H. Taggart, H. H. Fitch, C. A. Kitchen, C. B. Rohland, K. B. Davis, T. L. Gilmer, E. C. Stone, E. B. David, T. W. Prichett, M. H. Patten, J. J. Jennelle, W. A. Johnston, E. S. Talbot, C. R. E. Koch, Geo. D. Sitherwood.

MINNESOTA STATE DENTAL ASSOCIATION.

MINNEAPOLIS, MINN., May 29, 1889.

The sixth annual meeting of the Minnesota State Dental Association will be held in Duluth on July 10, 11 and 12th. Members of the profession are cordially invited to attend. L. D. LEONARD, Chairman Ex. Com.

The following topics for discussion will be presented at the Minnesota meeting: "Implantation," "Electro-Therapeutics," "Irregularities—causes and correction," "Art in its relation to Dentistry," "Comparative Anatomy of the teeth," "Histology and Pathology," "Nitrous Oxide—Anæsthetics," "Amalgams—varieties and methods," "Erosion and Abrasion."

INDIANA STATE DENTAL ASSOCIATION.

Convenes at Indianapolis, on Tuesday, June 25, 1889. The following programme has been prepared:

ESSAYS AND DISCUSSIONS.

1. Common Sense Dentistry, M. H. Chappell, Knightstown.
2. How I Failed. A. M. Markle, Crown Point.
   Discussion opened by H. H. LaFever, Union City.
3. Dental Medicine, Frank Overholser, Logansport.
   Discussion opened by A. W. Harlan, Chicago.
4. The Effects of Arsenic as Used by Dentists, E. A. Gillette, Terre Haute.
   Discussion opened by J. G. Reid, Chicago.
5. Soft Foil—When, How and Why? with clinical demonstrations, J. R. Clayton, Shelbyville.
6. A Case in Practice, J. W. Jay, Richmond.
7. Characteristics of Dental Temperaments, T. Edwin Bell, Hammond.
8. Necrosis of Alveolus and Incidents of office Practice, J. M. Teal, Kendallville.
9. Our Professional Status, J. W. White, Knightstown.
10. Treatment of Teeth with Exposed and Dead Pulps, T. B. Jarard, Vincennes.
11. The Application of the Arts and Sciences to the Practice of Dentistry, L. W. Comstock, Indianapolis.
12. The Combination of Metals for Filling Teeth, W. N. Wilson, Richmond.
13. Anæsthetics, J. A. Wendle, Waveland.

CLINICS.

Wednesday and Thursday, 9 a. m. to 12 m.

1. Filling with Gold Sections; also an exhibition with the Electric Lamp. T. S. Hacker, Indianapolis.
2. Filling with Porcelain Sections. F. M. Hamsher, LaFayette.
3. Inserting Gold Crowns. A. J. Morris, Indianapolis.
4. Filling with Gold and Tin Combined. T. A. Goodwin, Warsaw.
5. Sectional Filling Soft and Cohesive Gold. Merrit Wells, Indianapolis.
6. Porcelain Fillings with the Land Furnace. L. W. Comstock, Indianapolis.
7. Filling with Soft Foil Cylinders. J. R. Clayton, Shelbyville.
8. Filling with Soft and Cohesive Gold Combined. S. T. Kirk, Kokomo.
9. Gold Filling with Electric Mallet. J. H. Morrison, Connersville.
10. Seamless Gold Crown. E. B. Call, Peoria, Ill.
11. Pyorrhœa Alveolaris. A. O. Rawls, Lexington, Ky.
12. Gold Fillings. E. A. Royce, Chicago.

OBITUARY.

As we go to press we learn of the sudden death of Dr. F. H. Rehwinkel, of Chillicothe, Ohio. In our next issue we will give further particulars of his untimely decease.

THE

DENTAL REVIEW.

VOL. III. CHICAGO, JULY 15, 1889. NO. 7.

ORIGINAL COMMUNICATIONS.

DENTAL SOCIETIES.*

BY C. N. JOHNSON, L. D. S., D. D. S., CHICAGO.

Mr. President: There seems to be in the make-up of every perfect man an element calling for some kind of association with his fellow beings. A confirmed hermit is a perpetual contradiction. There is something unnatural about a man who lives only for and by himself. This relates as well to the dental world as to the world at large.

It was only in the natural order of the development of dentistry that dental societies were formed. The impulse which organized the first dental society was a noble one; it was an impulse born of the fervent longings for broader and better beliefs, for greater and grander accomplishments. It was the first important step taken to foster a true professional spirit, it was the first long leap toward permanent professional advancement.

Since then dentistry has steadily progressed at a rate impossible without the influence of association. Dentists have become more liberal, better learned, and larger-minded on account of their intercourse one with the other.

In the early days of dentistry the sentiment of one practitioner toward another was almost invariably that of envy, spite and petty spleen. Methods were kept locked in the minds of the inventors. New designs in instruments and appliances were jealously guarded from sight of a brother dentist. The operating case was a sealed sanctum, the door of the laboratory a labeled barrier. Men who should have been friends were bitter foes—who should have been brothers were more like bears.

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*Read before the Nebraska State Dental Society May, 1889.

All this is, to a large extent, changed. The man is now the happiest who can make known his methods first. Each vies with the other to discover something new to tell his friends. What was once considered a virtue is now almost a vice; what was then an exceptional charity now becomes a universal duty.

This change has been brought about largely through the influence of dental societies. There is no other medium capable of accomplishing such results. Dental literature, it is sometimes claimed, has been mainly instrumental in advancing dentistry in the last decade; but when we remember that the literature of the profession is made up principally of the proceedings of societies, we are brought back to the conclusion that after all the most potent factor in the result is professional association.

There is something more subtle than mere sentiment in the pleasure of meeting and exchanging ideas with one's fellow-workers. There seems to be an element of inspiration about it which never comes from reading articles in a dental journal. In reading we have not the personality of the writer before us, his countenance is not there, his varied expression; we are without the magnetism of his presence, the lights and shades of his interpretation, and the sustaining influence of his energy.

Then, again, there are many methods, the detail of which cannot be understood from a written description. Demonstration is needed, and we can get demonstration only through meetings of this character.

Not that anything is here intimated in disparagement of our dental periodicals; they have their place to fill, a place honorable in the records of dental progress. They preserve in a permanent form the best theories of the day, they record the sayings of the wisest men in the profession, and they reach hundreds who seldom have the advantages of dental associations. But with all the good they do—and the estimate must not be small—they cannot compete, in the aggregate, with the influence of our societies, scattered, as they are, through almost every civilized country on the globe.

The practitioner who in this day neglects to associate himself with some society fails in his duty to his profession, to his patients and to himself. He is deserving of disapproval he almost calls for our censure, and, above all things, he bespeaks our heart-felt pity. He cannot afford to ignore the benefits derived from meeting with men of his own calling; he cannot conscientiously shut his eyes to the reforms going on around him.

There is too great a tendency to narrow-mindedness in the daily practice of dentistry to allow a man the privilege of shutting himself away from his fellow-dentists. We need some kind of association to prevent us from falling into the ruts and grooves of bigoted self-reliance. The very nature of our work tends to contract our mental capacity, and unless we employ some broadening influence to keep our ideas liberal we are apt to recede rather than advance. Our work is mostly that of detail, and requires close attention to minutiæ. It is all laudable work, but the fact remains that deep and continued concentration on the small things of life produces in time a corresponding smallness in the mental calibre of the individual. A dental hermit will soon become as narrow and eccentric as the hermit of the hills. We shall never have a broad comprehension till we mingle freely with the learning and genius of the world, and to this end let us first of all mingle freely with one another.

A man, no matter how well posted he may be, always loses by neglecting society matters. We have the spectacle, in all large cities, of men who consider themselves beyond the need of intercourse with other dentists, who presume to hold themselves aloof with a sort of an aristocratic disdain of their fellow-workers, who aim at being unique and select in their methods and manners, but who, eventually, end in dropping far in the rear of the moving mass who seek attainment in those channels best suited to the purpose. It is this class of men whom we often find spending weeks and sometimes months on the treatment of an alveolar abscess that might as well have been cured at one sitting. We find them smearing carbolic acid over everything, because they have not learned that milder and sweeter-smelling drugs are often quite as effective. We find them, in fact, practicing all the old-fogy methods of bygone days, simply from the fact that they have not been brought face to face with other and newer methods infinitely better.

Then, again, there is another class of dentists who fail to attend meetings from motives entirely different. This is the country dentist, who is, of necessity, more or less isolated from his fellow practitioners, and who, in a great many instances, believes himself incapable of appearing to advantage by the side of those whose names he reads as connected with societies. In the very modesty of his nature he often remains away rather than force himself into a position where he feels sadly out of place. Now, modesty in general is a good quality. It is an especially beautiful attribute for a dentist to possess, but modesty of this kind is completely misplaced, and should not be tolerated for an instant. No matter how diffident our country brother may feel regarding his own abilities, we can assure him that there is not a dental society in the world but what will receive some benefit from his membership, if only he is an honest, earnest worker. Our societies should see to it that this class of men are made doubly welcome at the meetings, for many of them eventually make the most desirable members.

But then, again, there are many dentists who ignore societies, from various motives unnecessary to mention here. Some present one excuse, others another, while probably many offer none at all, save that of rank indifference. But whatever excuse may be given, it must be admitted inadequate, when the importance of societies is fully recognized.

It will likely be inferred, from the foregoing, that the writer is an enthusiast on the subject of dental societies. Truth to tell, he is. He firmly believes in their good influence; he fain would belong to all of them if he could, and it is his earnest desire to see every dentist in the land associate himself with some of them.

And yet, with all this, he cannot shut his eyes to the fact that there are many weak points in the ordinary dental society of today. It may be well to notice some of these, even if, in so doing, it becomes necessary to trespass somewhat on the enthusiasm of the writer.

First of all, then, it may be said that our societies are hampered with too much routine business. Every discussion over business matters takes away so much time from scientific subjects. More wrangling and ill-feeling is engendered through this agency than in any other way. One member seldom censures another because there happens to be a difference in their methods of filling a tooth. Their theories may be widely divergent, and they may enter into a spirited discussion regarding the merits of each; but, through it all, they will remain the best of friends. Not so, however, when the difference is over the report of some absurd business committee, which, in the first place, never should have been appointed. It is here the very demon of disorder seems to get hold of men, and those who, in an ordinary scientific discussion, are ever gentlemanly and courteous to their opponents, now become resentful, perverse and quarrelsome.

To be sure, it is impossible to have any kind of an organization without some business attached to it, but in dental societies this should be curtailed to the very lowest possible limit, and should be made secondary to the real object for which all such societies are supposed to be organized. Probably the best method would be to appoint an advisory board or council for the purpose of transacting all the business of the society, so that such matters may be excluded from the general sessions. Such a system is now in vogue in several societies, and is said to be working admirably.

We had an example of a dental meeting without any routine business on the occasion of the late twenty-fifth anniversary of the Chicago Dental Society, held in February last. Without wishing to boast of a home organization, it is safe to say that if ever there was an ideal dental meeting, that was one. Not a moment's time was wasted on superfluous business. From first to last it was one prolonged and profitable discussion of topics vitally related to the practice of our profession. The success of that meeting has led the writer to consider the evil effects of having too much parliamentary incumbrance attached to a society, and has induced him to speak so emphatically on this occasion.

But this is not the only unfortunate feature about our societies. In many of them office-seeking is an undeniable evil. This is probably not true of an association like the Nebraska State Society, on account of the natural liberal-mindedness and spontaneity of western dentists. It is not supposed that questionable methods in the way of running for office, ever find expression with men who are so open-hearted and broad in their ideas as the dentists in this part of the land have proved themselves to be. But in some of the societies further east, it is a lamentable fact that the meetings are often run in the interests of society politicians, who delegate to themselves the privilege of conducting matters on their own selfish plans and for their own petty purposes. This kind of practice is always at the expense of the higher aims sought to be attained by every creditable society, and wherever such a spirit as this presents itself, it should be discountenanced by every reputable member of the profession.

To be an officer in any good dental society is an honorable position; it is one calling for the best and noblest that lies within the recipient; it is one of which he may well be proud if he has attained it by legitimate means. If it has come to him as the spontaneous recognition of true worth, then he may ever look upon it with the satisfaction of feeling his labor well rewarded, and he will be more closely drawn in sympathy to the fellow-practitioners who have thus shown their appreciation of his qualities. But if the office has been gained at the expense of his manhood or that of his friends, then he had better never have been elected; for that which otherwise would have been an honor must, in his inmost thoughts assume the form of an illegitimate possession. It certainly must seem belittling to a man of any dignity to feel that he had been placed in a high position by underhanded methods. Politics in dental societies can be productive of nothing but ill results.

Then again, there is another evil growing out of, or concomitant with, the last mentioned. This is the formation of rings or cliques, whereby one set of men strive against another set, much after the methods of ward politicians. No matter what question is up for debate or ballot, we invariably find the members of a certain clique pulling together. They will all vote one way irrespective of individual conscience. This practice is a continual stultification, as no two men can invariably believe exactly alike on all questions, and when they perpetually vote alike it gives the emphatic lie to their manhood. Every member should be perfectly independent, and should not allow himself to be prejudiced in favor of any clique.

Another class who reflect no credit on a society is made up of those men who seek to gain every particle of knowledge and benefit possible from the meetings, without giving in return the slightest help toward making the society a success. It is this class of men who habitually come late to the meetings, stay long enough to hear some paper or see some clinic which they expect will interest them, and then hurry away with a total disregard of their duties to the society. They lend not one iota of aid toward sustaining the interest, and their whole motive is a selfish one. You will usually find this kind of a man making immense capital out of his connection with societies. During his brief absence the local paper will probably contain a notice stating that Dr. So-and-So is out of town in attendance on the State dental meeting, and the citizens are thus expected to believe that the doctor is a very important member of his profession. His patients will often hear for some time to come the expression, " when I was down at the State meeting," and he will seek in various ways to make the society do duty for him in lieu of other more questionable methods of advertising. This sort of procedure would excite our risibility if it was not so contemptibly mean. The poor little narrow-souled pretender will soon lose himself in the labyrinths of his own presumption, and shame will surely come to him at last. We hope the time will arrive when societies will not be disgraced by such men or such methods.

And now comes one more manner of men who call for our especial censure. No other class exert so deleterious an influence on societies, or prove so emphatically the narrow-mindedness of some dentists when wrapped up in their own selfishness. We may term these the "disaffected class." They constitute those men who are continually wearing an air of injured innocence because they or their friends have not been elected to office.

They are constantly sneering at the conduct of affairs in the Society, and busy themselves figuring out ulterior motives to attribute to those in authority. It is not within the limits of their philosophy to admit that there ever was such a thing as an honest election. They watch every move and listen to every word of the officers with the evident expectation of unearthing various schemes which they believe the officers always have on hand for their own aggrandizement. They fully believe that nothing but selfish motives ever prompted a single action on the part of their opponents, and in fact grow morbidly suspicious of everybody outside their own coterie. They continually throw cold water on every movement intended for the advancement of the Society, and are a worse enemy to progress if possible than any of the others who have been the recipients of our criticism. Heaven protect our societies from the disaffected.

Now the writer is aware that some of the foregoing may seem a rather harsh arraignment. It would be harsh if it were not true. It is sometimes necessary to tell the truth even if it carries with it a sting.

The writer has felt free to speak his honest convictions from the fact, as before intimated, that he believes the Nebraska State Dental Society to be free from many of the short-comings he has mentioned. He ventures to hope that among the members of this Society there is too liberal a spirit to admit of the faults and frail-ties found in many others, and what he has said is more in the nature of a warning against the possibility of falling into the same mistakes that have marred the record of many an otherwise noble organization.

If you are to have an ideal dental Society you must keep yourselves above the petty spites and spleens of common humanity. You must be men, not mice. You must be brothers, not bigots. You must be all of that embodied in the grandest sentiment ever born in human brains—the "Brotherhood of Man." You must be friends, not foes—fellows, not fanatics. You must help and not hate—encourage and not encumber. You must be governed by good and not by greed—by liberality, not by littleness. You must be open, honest, earnest and true. You must be a class of professional workers, not a clique of political wire-pullers. You must be faithful in all things—faithful to your Society, to your profession, to yourselves, and above all else you must be faithful to your suffering fellow-man.

Having these sentiments as the ground-work of your creed you may well hope to advance in a line unthought of in your loftiest dreams. You will outrun the swiftest, outlast the longest, outshine the brightest. Your record will reach beyond the bounds of sections, States, countries and continents. You will make an impression upon the world.

SOFT RUBBER PALATES FOR CONGENITAL CLEFTS.

By Calvin S. Case, D.D. S., M D., Jackson, Mich.

The construction of artificial vela and obturators is a branch of dentistry that has been confined to the hands of a very few; and while the profession has taken a casual interest in hearing of the development and progress of an art for restoring articulate speech to cleft palate patients, it has looked with indifference upon the idea of adding this accomplishment to the general professional repertoire, or of making it one of the requirements of a college curriculum.

The subject has been surrounded with so much obscurity and fraught with so many difficulties in the way of practical achievement, that the general practitioner has naturally come to believe that special training and skill, of no ordinary quality, is indispensable to the production of anything like satisfactory results. And so, all that has been successfully accomplished in this somewhat isolated specialty, has been done by a relatively small number of dentists, the most of whom by arduous and persevering labor have worked out a scheme of their own. This general indifference on the part of the profession I believe to be mainly if not wholly due to the fact, that, while the subject is an old one, and text books of dentistry are considered incomplete without it, there has been no system introduced and adopted in our colleges and elsewhere, which could be taught and practiced with sufficient comprehension and ease to bring it within the reach and accomplishment of every dentist.

As I have said elsewhere: "the difficulty which the dental profession has labored under in regard to this subject has been the need in text books of proper and sufficient instruction relative to the practical steps of this work. To those who have not made the attempt to follow the direction of some text book in the construction of their first case, such a statement may seem improbable—and especially to a casual inquirer who turns over the pages of "Kingsley's Oral Deformities" and sees the space given to this department, with the array of illustrations and descriptions, yet were that one to attempt to use it as a guide in the construction of means for producing a soft rubber palate, he would find it sadly deficient in specific directions for practical procedure. And now the same thing can truthfully be said of the "American System of Dentistry." I do not wish to be understood as under-rating the valuable services of Dr. Kingsley, for as I have repeatedly said, to him is mainly due the honor of bringing this department of our art to its present high standard of perfection ; and to him we are indebted for that wonderful invention, the Kingsley soft rubber palate. I only regret that he did not years ago give us a detailed description of how to make it.

Its peculiar shape, lightness, flexibility, non-irritability, and the facility with which the muscles soon make use of it in closing the naso-pharyngeal opening, perfecting impaired tone and articulation, renders it fully capable of fulfilling the requirements of nearly, if not every case.

When I hear dentists who have had experience, speak depreciatingly of the soft rubber palate, I can but believe they have either lowed up its introduction with subsequent changes, in keeping with the absolute demands of the case. Further, I can understand how a palate which had been made by some tedious method which would not admit of easy reproduction or change of shape would be worn long after the deterioration of the soft rubber, rendered it unfit for use or decency.

Many dentists imagine they have fulfilled all the requirements of the operation when they have succeeded in producing a palate something after the shape of the Kingsley, but which in reality is far from that nicety of perfection necessary to success, and with which they seem to expect that the patient will talk with considerable distinctness without the indispensable vocal instruction that should always be given.

To me it is not strange that so many are dissatisfied with soft rubber palates, when I remember that every attempt to produce them so far as I know—other than by my system—has been done with the view of making the veil of the palate full size from the beginning, and with no expectation or preparation for changing it afterward to meet requirements of newly developed functions in muscles, and changing shape of pharynx. This I hold can only be ascertained by time and an intelligent study of individual needs in order to give ultimately the proper shape, size and direction to the veil of the palate.

In learning to talk, the effort to speak distinctly in order to be understood, will in the normal state result in the natural and complete development of all the muscles of speech. And though cleft palate children do not realize their condition, or that they are different from other people until later in life, still there is the same desire with labored efforts, however futile, to speak distinctly. But in the latter instance, instead of the muscles being synchronally and normally developed, those which can be made to subserve the purpose of correcting the main defect, *i. e.*, the escape of sound into and through the nose, will be developed with unnatural functions and abnormal physical aspects, while others will continue in a rudimentary and useless condition. If this is allowed to continue far into adult life the capabilities of the muscles will have become so fixed by habit and development, as to be of little aid in working a movable artificial appliance. This has led many to the belief that the coöperating power of muscles in all cleft palate cases could not be depended upon, and to strive in their practice to produce some

failed in giving it the proper shape and position, or have not fol-
immovable appliance which would in itself fill all the requirements.

If, however, an instrument is inserted in youthhood or early adult life [and this I expect will be the rule when all dentists acquire the ability to construct cleft palate appliances] and one that is in perfect accord with the natural uses of the muscles, I believe there will be no ground for the above belief.

When it is ascertained that the opening to the nares can be effectually closed by the palatal and pharyngeal muscles working in conjunction with the artificial palate these muscles will immediately commence developing new functions and changed physical aspects with this object in view—leaving the tongue and lips to acquire the methods of perfect articulation.

Now allow if you please that the artificial palate or obturator is correct when it is first inserted—that is, in shape, size and position, so as to be worn and borne, with the requisite degree of comfort—*it would soon be incomplete in many particulars*, and if as is too often the case, it can only be renewed by vulcanizing a new one in plaster, from a hard rubber pattern in the hands of the dentist, or from metal casts that were made with great difficulty and therefore changed—if at all—with great reluctance, or if it happens to be one of the palates made by Dr. Kingsley which he furnishes to those dentists who do not care to go to the trouble of making the models and palates for each case, subsequent vela would all be of about the same shape and size, and therefore incomplete as an adjunct in producing that perfect result that might otherwise be accomplished.

It has been my fortune to meet with a number of cases wearing palates which were made or obtained in the manner above described. I have also seen a few of those imperfect affairs where a soft rubber veil had been vulcanized to the posterior border of a hard rubber plate, and made to hang between and partly in front of the bifurcated velum-palati. The most of these had been worn in the mouth without change for years, probably on account of the difficulty of renewing them. In fact the majority of the patients were not aware that they would ever require to be renewed; and this in many of the instances seemed to be the intention of the operator, in-as-much as there was no apparent preparation for such a procedure.

It is needless to say of those cases where the palates had been worn longer than one year, that the soft rubber was so disintegrated by the fluids of the mouth, and the vela so changed in shape as to render them exceedingly unwholesome and useless, on this account alone. Whereas had they been right in other particulars and made so as to button on and off from the sustaining plate, and by some system that would admit of ordering a new palate from any part of the world, at little expense to the patient and no particular trouble to the operator, the case would have been very different at the clinic of this Society. I believe I have had no difficulty in convincing you that the whole operation of producing soft rubber vela for individual cases is not more difficult than many things in dentistry which you are called upon repeatedly to perform. From the impression to the final vulcanizing of the palate, every movement in modeling compound, plaster, sand, metal, and rubber, can be produced with mechanical simplicity, and if desired, every piece can be duplicated with ease and dispatch, enabling the operator to perfect any error that may have been made in the first attempt; and even after completion the possibility of readily changing the shape of the velum according to demands that are not at first recognized is a matter of no little importance. Further, the method which this system introduces of making the veil of the palate, at first thin and abridged so as to be more acceptable to the naturally sensitive mucous membrane, and afterward extending and thickening it, to meet the requirements of the case, by simply scraping away portions of the metal casts, is a desirable feature of the operation.

Since my clinic at Chicago, I have invented a new flask with which many difficulties are obviated that arose with the one then in use. First, it is made so as to use a minimum quantity of the metal—being now about the size and shape of a good sized goose egg. Second, the inside surfaces are more perfectly polished and beveled at a greater angle, greatly facilitating the removal of the models. And third, by an ingenious device I have gotten rid of the bolts which were always difficult to manage, especially when it was necessary to close the flask containing sand impressions, previous to pouring the metal casts.

One of these flasks with a full set of models, used in conjunction with my illustrated articles in the *Cosmos* of July, 1885, or the *Archives of Dentistry*, of June and August, 1888, will, I believe, enable any dentist of ordinary ingenuity to produce a perfect artificial palate with no great difficulty.

GOLD.

The discussion of the merits of gold as a material for filling teeth may seem to have been already exhausted, and yet I fancy there may be a few suggestions offered which will be of use to, at least, the less experienced members of the profession.

Students are instructed in the use of it, but teachers differ much in the details of their instruction, and to enable the dentist to select the best methods presented he should be well acquainted with the properties of gold and the different conditions in which it is presented to him.

It has been the fashion of some manufacturers of gold foil to make a great mystery of the matter, and to try to make their customers believe that they could make different kinds of gold to suit the tastes of different dentists. It is well to understand that in the preparation of gold, the workman is very limited, the processes are simple, and once instructed in the necessary manipulations, only faithful adherence to the rules is necessary to success.

Gold is an elementary substance. To the present time there has been found no chemical process by which it could be separated into two or more substances, therefore it greatly simplifies the matter that we can consider it as a primary or elementary substance, having always in itself the same unchangeable qualities.

We are writing of pure gold, and it should be borne in mind that when we speak of eighteen karat gold, sixteen karat gold, etc., although it conveys the idea intended, the expression is inaccurate; if such phrases were accepted literally, we should infer that there were different kinds of gold, when, in fact, these are only terms for compounds of gold and other metals, and they also indicate the proportion of gold in the compound.

For the dentist's use in filling, the value of this metal depends upon its ductility and its quality of resisting oxidation under any conditions to which it is subjected in the mouth.

Neither of these conditions can be improved by the addition of any other substance; on the contrary, any addition lessens its value for these properties, hence we arrive at this conclusion, that the only change we can make in it is a change of form.

The ideal form of gold for fillings would be a soft plastic state in which it could be pressed into the cavity and afterward hardened, and this form is desirable because there would be perfect cohesion between all its parts, and we could be perfectly sure of filling all parts of the cavity however irregular it might be.

But, as we cannot have gold in this form, we take the best substitutes for it, and these we find to be pure gold, either beaten into very thin leaves or else in the form of extremely fine sponge, because in these forms it can be used more nearly like a plastic substance. Gold cylinders are only foil rolled into cylindrical form and cut into various lengths.

In practice it is found that under certain conditions gold that is not readily cohesive best answers the purpose, and usually the foil as it comes from the beater's hammer without being annealed will be found sufficiently non-cohesive. For other cases, especially in making contour fillings, it is desirable that the cohesive quality should be the most perfect possible.

As we have said, any change we can make in it can only be a change of form, and to this we must resort after the foil is beaten, in order to develop the cohesive quality. To understand this, let us trace the process of manufacture.

The gold having been refined, that is, separated by chemical process from all other substances so that we have absolutely pure gold, is melted and cast into an ingot. In this the crystallization is perfect; each crystal has its perfect form, and all the atoms occupy their normal relations to each other.

The next process is rolling the ingot into thin ribbon. This compresses the gold, increases its density, and tends to convert the crystals into elongated and flattened layers.

The ribbon is cut into squares and beaten into very thin leaves. This gives the gold a smooth, hard surface, and two of these surfaces can be made to cohere only with the greatest difficulty.

If it is desired to make it absolutely non-cohesive under any degree of pressure from the condensing instruments, it can be done by depositing on the surface a film of foreign matter, or by the addition while the gold is melted of a very minute quantity of another metal. In neither of these cases will the filling be of pure gold, and if subjected to a red heat there will probably be a slight change of color. The same change of color may be looked for on the surface of fillings made with it.

To develop to the utmost extent possible the cohesive quality, the first essential is that the gold should be absolutely pure ; next, that the hard, smooth surface should be changed to a softer and roughened one.

Heat is the only agent required to produce this result. By its expansive power, separating the particles further from each other it renders the whole mass softer, and at the same time there seems to be a tendency to re-arrange itself in the crystalline form and in this way producing a roughened surface; and when two such surfaces are brought into contact they interlock, and the points of union are so fine and close together that under very moderate pressure the two pieces become practically one.

There is a difference of opinion among operators as to the degree of heat to which the gold should be raised when annealed.

I have no hesitation in saying that the greatest degree of heat short of melting the gold, will be found the most effectual. In order to see the truth of this it is only necessary to consider how heat makes gold more cohesive.

As already observed, a piece of gold when heated occupies more space than it did before. This can only be by the separation of the atoms of which the mass is composed further from each other, this is proved by the fact that its weight when heated is the same as when cold, and if the heat is raised sufficiently high the atoms become so far separated as to pass freely about each other, or, in other words, the gold becomes liquid.

It is apparent, therefore, that the greater the heat applied in annealing the gold, short of melting it, the better the results, so far as the welding quality is affected, but care must be taken not to melt even the edges of the foil, and for this reason annealing it on sheets of mica is a better way than passing it through the flame of a lamp.

The advent of cohesive gold foil was received with many prophecies of failure, and many of the prophecies were fulfilled before the operators became proficient in the use of it, but intelligent experiment soon taught the proper methods and instruments necessary to make successful fillings, the tide of opinion set strongly in its favor and the dentists who continued to use soft foil were considered old fogies, Bourbons in dentistry, hardly worthy of recognition by their more progressive brethren.

For some years past the pendulum has been swinging the other way, and now, although the proportion used of each varies considerably with different localities, it would probably be a fair estimate to say that about equal quantities of soft and cohesive gold are used.

This would seem to result from the application of common sense to settle the question of which is the best. It has been found that to make contour fillings, and to fill at all in certain other conditions, the dentist must rely upon his ability to weld the gold into a solid, coherent mass, and in order to perform these operations and save teeth that would otherwise have been lost, he feels the extra time and labor well bestowed.

It is the opinion of many operators that, in a large number of cases, soft foil may be used more successfully than cohesive gold, and we know that in cases to which it is adapted the operation can be completed in half the time required for cohesive fillings.

This sort of compromise is the usual result when extremely divergent opinions and theories are tested by practical experiment.

Each opinion has truth on its side, but not the whole truth, so it is the part of the wise man to sift all opinions, gathering from each the kernel of truth and rejecting all not consistent with sound reason or confirmed by careful experiment. NEMO.

A QUARTER CENTURY OF OPERATIVE DENTISTRY.

BY DR. C. A. KITCHEN, ROCKFORD, ILL.

We are not informed as to the exact date when the first teeth were filled as a means of preventing further decay, nor do we know to whom the credit should be given for making the worthy attempt. The records do show, however, that at a very early period devices were employed for filling vacancies occasioned by the loss of the natural teeth; that files were used to remove the rough edges and surfaces, and that cavities of decay were often filled with lead to prevent breaking the teeth in the attempt to remove them.

We may easily surmise that some one who had filled a cavity for the purpose named, failed to extract and found afterward that the tooth remained without further decay, thus revealing by accident the possibility of preserving the teeth in this way and of bestowing great benefits upon the human race. The tenth of the celebrated Greek Laws of The Twelve Tables (relating to funeral ceremonies) has among others this direction: "Let no gold be used, but if any one has had his teeth fastened with gold let it be lawful to bury or burn that gold with the body." This, no doubt, refers to *ancient bridge-work.* At least it convinces us that something very nearly resembling modern bridge-work was made use of in those days.

The history of operative dentistry does not extend much beyond the time when it was introduced and practiced in America. When independence was declared in 1776 there was not a dentist in this country. A few years later, at the time the Constitution was adopted (an event which has been brought forcibly to our minds by the recent celebration to commemorate it's one hundreth anniversary), several had located and commenced practice. Among them were men of inventive genius who laid the foundation principles of modern dentistry.

Dr. Eleazer Parmly said that the first gold filling he ever saw was in the year 1815.

The use of gold as a material for filling teeth marked an epoch in the history of dentistry. Although the methods first used in its preparation entailed much labor and patience (as it was the custom to make the foil from gold coin, the operator rolling out and beating the coin into foil as required), yet its many valuable properties were soon known, and those who were expert enough to properly prepare and use it were enthusiastic in its favor.

Our dental ancestors were soon called upon to battle against the encroachments of quacks.

About the year 1833 two Frenchmen (Crawcour by name) introduced, with a "great flourish of trumpets," what they called "Silver paste," but which proved to be a worthless quality of amalgam.

They succeeded by much advertising in attracting attention to their new material, and, although not themselves dentists, they were able to draw many patients away from the worthy men who had labored faithfully to perfect themselves in the use of gold.

The Amalgam war, as it was called, raged fiercely, and resulted in a drawn battle. The Crawcours were driven out of the country, but many others had adopted the habit of using the vile material they had introduced.

The first dental college, the first dental journal and the first dental societies were instituted about the year 1840.

The pioneer movers in these worthy enterprises, Drs. Harris, Hudson, Hayden, the two Parmlys and others are entitled to our highest admiration and reverence for their devotion and labors to develop dentistry on a scientific basis.

In the year 1844 the Mississippi Valley Dental Association was formed; it is the oldest society of the kind in existence to-day. Many of its members have taken an active part in the organization of other societies but their attachment to this one, that has witnessed the rise and fall of many others, is natural and commendable.

The American Dental Association elected its first officers in 1860. Wm. H. Atkinson, (most of you are acquainted with the grand old man), was the first president.

Never before had such an aggregation of talented and skillful dentists enlisted under the banner of so great a leader. Look over the list of its membership, and where will you find another such body of earnest colaborers?

This association convened in Chicago, in July, 1865, at which time and place our own society was organized.

If the student of dental history receives his impressions of the status of operative dentistry from the attention given the subject in that convention, he would probably arrive at the conclusion that other matters were considered of greater importance; there was not a paper presented upon the subject of operative dentistry; the nearest approach being one furnished by Prof. McQuillen, entitled Dental Manipulation. There were, however, two lengthy essays upon Mechanical dentistry.

One by Dr. Wildman, treated the subject of dental vulcanite; he gave the formulæ for preparing the substance to secure different colors and described the process minutely for manipulating the material.

Dr. John Allen of New York, who was then, as he is now, recognized as authority in dental prosthetics, read a paper upon the subject, urging continuous gum and gold work as preferable and more artistic than the newer, cheap bases.

Now if this representative society, embracing in its membership the talent and skill of the profession of that day, could conduct a successful convention without giving more prominence to this important subject, there is reason for the opinion that operative dentistry did not at that time receive the attention it deserved and is at this present time demanding. This apparent lack of interest was not because the questions we now discuss were not before the profession. Most of them *were*, but for the time many seemed anxious to try and meet a too general demand for painless extraction and cheap base for artificial dentures. The introduction of vulcanite corresponds in many respects to that of amalgam. To the thoughtful, progressive dentist the question suggests itself: *Have not these two substances done more injury than good?*

At the convention referred to, many for the first time saw rubber dam and heard for the first time about the mallet for condensing gold. It must be remembered that with the exception of a very few who used crystal or sponge gold, all were using soft gold foil for filling teeth. None present for a moment realized that these new aids were to revolutionize the methods then in vogue.

The valuable properties of cohesive gold were demonstrated on that occasion by Dr. Atkinson, who produced a piece of solid gold which had been made from soft foil welded at a low temperature, thus confirming what he had previously advocated,—that gold might be welded at a low temperature in the act of filling.

The use of cohesive gold soon became general, and experts were able to accomplish with it results they had hardly dared hope for.

At this period there were no dental colleges in the west except the Ohio, at Cincinnati. There were two western State societies—the Iowa and the Indiana; while St. Louis and Chicago had the only city associations. The few dental colleges in the eastern cities received but little support or encouragement, and their stockholders probably received no dividends.

Students, or more properly, apprentices, were initiated into the mysteries of the art upon the payment of a good round fee, and after serving from three to twelve months. The actual practical knowledge they acquired amounted in most cases to little of value.

There were but few dentists throughout the country who were competent to perform creditable operations, much less to show or teach others.

Many of you will well remember the methods then often employed to secure patronage. The large, showy sign, newspaper advertisements calling attention to handsomely furnished dental parlors, or to wonderful operations performed in *jewelry* filling, etc., which are now the exception—the dentist who makes use of them lying under a burden of strong suspicion. The presumption which first suggested these unprofessional methods, together with the ignorance which made them tolerated and remunerative, have passed or are passing away.

Many men then in practice desired more knowledge and skill; they made use of all the facilities afforded, but their environment made advancement next to an impossibility.

To such as these, the newly formed societies provided the long sought opportunity.

Many who attended their first dental society clinic saw, for the first time in their lives, a creditable operation, felt for the first time the hand grasp of a friendly, progressive professional brother, heard for the first time reasonable, dispassionate discussion, received for the first time sympathy and kindly advice from those willing and competent to aid and assist. Was it any wonder that seed sown on such "good ground" should germinate and bring forth fruit? Was it not to be expected that these same men would return to their homes and labors with new resolves and added zeal to extend the benefit of their new experience to their patrons? Who will deny the potency of the dental society? It has not only been a school to the practitioner who desired to improve its advantages, but it has developed a spirit of general improvement. It has promoted dental education by encouraging dental colleges. It has increased the demand for dental literature, and it has wielded a powerful influence in every direction for the growth of dental science.

Twenty-five years ago the comparatively few who were really expert operators were well known. They could then, like the prohibition party, "stand up and be counted;" but now every city can point with pride to so many skillful dentists that individual excellence is almost lost sight of in a multitude who are similarly endowed. Manipulative ability to insert good fillings is not the only accomplishment of the dentist who has kept "up with the procession." He has acquired a better knowledge of diseases of the mouth and teeth, and a better acquaintance with the medicines suitable for their treatment.

It has been said that, not many years ago, the outfit of the general practitioner of medicine was composed of calomel and jalap. There was a time, and not so very long ago either, when many dentists treated all diseases of the teeth with iodine and creosote. The two were used singly, in combination, or interchangeably, at the caprice or convenience of the operator; but now (thanks to Drs. Black, Harlan and others) a great many have learned to use medicines intelligently, and are restoring diseased teeth to health and usefulness that were pronounced beyond help only a few years ago.

I need not enumerate the many valuable inventions that have come to light during the past quarter-century, you are all acquainted with them and their uses. They seem indispensable now, and it is hard to realize that excellent and durable fillings were made many years ago by the better class of operators without their aid, but such is the fact.

The past few years have been fruitful ones in the production of devices for restoring roots of teeth to usefulness. Gold and porcelain crowns have come into general favor and serve an excellent purpose.

Dr. Morrison (who is the *real* inventor of the gold crown) says that he thinks the crown business is being over-done—that he believes some of the enthusiasts are cutting off teeth that a conservative and skillful dentist might fill to advantage. I am of the same opinion.

Bridge-work has been brought into prominent notice. If we may believe the reports, we are led to conclude that some men are meeting with more pronounced success in furnishing their patrons with bridges than they were ever able to secure by filling teeth.

Others find many occasions for replanting and transplanting teeth, yet the majority are not hopeful of good results in these directions.

The development and growth of dentistry as a scientific calling has not in the past depended so much upon experiments, nor on the innumerable inventions and appliances furnished for our convenience, as many may be led to believe; but progress has been made because of the ever-increasing anxiety of the members of the profession to obtain valuable information and make it of practical use in the daily routine of practice. Twenty years ago men would not make sacrifices of time and money to attend society meetings, but such a change has come about that now distance, time and money are not considered if something useful and valuable may be acquired.

A worthy rivalry now exists in the different societies in their efforts to present the most promising and entertaining program of exercises. A comparison between the sessions of twenty years ago and those of the present time is convincing evidence that a wonderful interest has been awakened.

The objection may be made that this paper has more to say about dental societies than of operative dentistry, to which I would answer that the two are so closely related and interwoven that it would be difficult to deal with the two separately. The history of one is the history of the other.

The desire to become expert operators, led members of the profession to attend the conventions. The clinics and discussions of the sessions have afforded the means of gratifying that desire—the growth of operative dentistry followed as a natural result.

Our dental colleges have multiplied and made great advancement during the last quarter-century, they have enlarged their facilities and increased their equipments to such an extent that students may now receive *practical* as well as theoretical education.

The practitioner's course, adopted by some of the enterprising colleges, giving opportunities to practitioners heretofore unobtainable, is deserving of support and encouragement.

Some to whom were denied the opportunities now afforded, have reason to be grateful to the men who have stood by these various enterprises. Every dental society, college and journal, owes its success to the devotion of men whose personal services were indispensable, and whose names deserve to be written upon the pages of dental history of the future.

Among our own members are those who have labored faithfully to keep the Illinois State Dental Society in the front ranks. They have prepared for us valuable essays that have attracted attention throughout the whole country and abroad; they have made excellent fillings at our clinics that we have admired, and hastened to our homes to imitate, they have extended to us at our annual meetings enough cordiality to cheer and encourage us through the whole year. What clear and shining records are theirs, and what worthy examples they present for us to emulate.

THE FIRST PERIOD IN THE HISTORY OF DENTISTRY.

BY DR. JOHN J. R. PATRICK, BELLEVILLE.

The first period in the history of anything in this world, is as difficult to comprehend as the last, or ultimate extinction of anything. The first stages in the development of man are mantled with darkness; the life incidents of infancy are erased from the memory of the child; the activities of childhood are forgotten in youth; and the life history of youth is but a dream in the memory of the man.

Thus the history of an individual may be justly compared to the life history of the whole species. We have been so accustomed to precise dates in what has hitherto been considered as history, without troubling ourselves whether the figure indicated was true or false, that we find it hard to accommodate ourselves to relative data; to a history without exact dates, as in geology; forgetting that history with positive and direct dates, does not go very far back. The most authentic dates do not go further back than the era of the Olympiads, established in honor of Jupiter, 884 years before the Christian Era; and the most ancient Greek inscriptions do not reach beyond this time. The Olympic Games, so famous among the Greeks, were in existence 500 years before the computation of time by the Olympiads was established. All previous ideas of time are genealogical computations of generations of either kings or priests; and like the faint echoes of distant thunder, a few doubtful, names, and vague dream-like legends are all that come down to us from the unfathomable past, for there is an eternity in the past as well as for the future.

Before the invention of letters man had to depend upon memory for traditions and rules of life, and was unable to accumulate knowledge by keeping a record of events and storing up observations for the use of future generations. Tradition, custom and Sciolism, preceded history, law and science. Long before man was capable of inventing an alphabet, or a few simple forms of picture writing and hieroglyphs to record his acts, which was the beginning of history, there were life and industry, disease and death on the face of the earth.

The earliest record we have of the cosmographic and geographic ideas of the age, and of the people to which they belonged we find in the heroic poems of Homer; especially in his description of that shield of divine workmanship so inimitably represented in the eighteenth book of the Iliad, in which we are presented with exact images of all the actions of war, and employments of peace; and are entertained with a crude but delightful view of the Universe. And yet Homer, who lived 900 years before our Era, minute and exact as he is, in describing the scenes on which his heroes moved, describes the earth as a plane bounded in all directions by the waters of the ocean; and beyond the dim confines of the earth, establishes on the mysterious limits of the horizon, pillars which serve as props to support the skies. We have here nothing more than the primitive idea, which the spectacle of nature awakens in the mind of any one endowed with an inquiring mind, dressed in the glowing colors of a warm imagination. No man understood persons and things better than Homer, or had a deeper insight into the passions and humors of human nature. He represents great things with sublimity, and little ones with propriety. Strabo, the celebrated Greek geographer, philosopher and historian, who flourished under Augustus some thirty years before the Christian Era, assures us that Homer has described the places and countries of which he gives account with an accuracy that no man can imagine who has not seen them. Such was the universal genius and comprehensive mind of this great original. It was from his poems that all the worthies of antiquity drew their inspiration, lawgivers formed the first sketches of their laws, founders of monarchies and commonwealths took the models of their policies. In him philosophers found their first principles of morality, astronomers learned their knowledge of the heavens, and geometricians of the earth, kings and princes the art of governing, and captains of forming a battle, of encamping an army, besieging towns and of fighting and gaining victories. Nothing can be more wonderful than the descriptions of his battles, which take up no less than half the Iliad, and are refreshed with so great a variety of incidents that no one resembles another, with such different kinds of death, that no two heroes are wounded alike. Every battle rises above the last in greatness, horror and confusion, with a very deluge of noble ideas. Homer's description of the divine shield which he makes the God of arts and metallurgy construct for Achilles, shows the Greeks to have been far advanced in the arts before they had letters, poets or historians to record their achievements.

Thus we find that time begins for the historian only where chronology takes its rise. The vast multitudes of men engaged in all the active pursuits of life, had to furnish the material for that regular sequence of events from which the historian forms his record.

The history of all people begins with shadows and scattered hints; the heavens and the earth commingle in the mists which hang around the morning of history. Some of the early Greek historians fix the time when the Gods intermingled with men about two centuries before the Olympiads. Herodotus, however, being more rational, doubts that men ever descended from the Gods. The state of society was such, both before and after the Christian Era, that it was almost as easy to become a God or a Goddess, as it is at the present day to obtain the title of honorable, von, count, or M. D. Ability, cunning or great wealth, was all that was necessary to insure the title. To sacrifice largely as Pythagoras did when he offered 100 oxen for the lucky solution of a geometrical problem, to erect a temple to the Gods and endow it, were a sure means of securing a deification to the donor. This did Æsculapius, and became a God in consequence; and no mean God was he when Socrates, after drinking the executioner's poison, and viewing it in the light of a therapeutic agent exclaimed, "I owe Æsculapius a cock, give it to him." Every God had its peculiar sacrifices—the sun, horses, Vulcan, fire, Diana, deer, Venus, a turtle, Ceres, a hog. There was not a passion, vice or virtue, trade or occupation, but had its God or Goddess. Gods for candles, Gods for weddings; Comos, the God of good fellows, Gods of silence, of comfort, of youth, of old age; Gods born of men and women, and Gods not born at all, but springing like Minerva, from the head of Jupiter.

Hesiod, contemporary with Homer, classified 30,000 Gods. Varro, 300 Jupiters.

When Romulus was made away with by seditious senators, Julius Proculus, to satisfy the people, gave it out that he was taken up to heaven by Jupiter; a temple was built, they worshiped and were pacified.

Cicero wrote to Atticus, his friend, that his daughter Tuliola, might be made a Goddess and adored like Juno and Minerva, as she well deserved it.

This was the condition of Rome when christianity took possession; all the fugitive deities of the world then known, found a welcome and were tolerated; for Rome had nothing of her own—a very Babel of mythology; so that Tertullian, one of the early Christian fathers said: "That had men not been, there had been no Gods."

In later times, to endow a monastery, to found one, or to have performed miracles, was the surest passport to canonization. The following imperfect list will serve to show how general was the appropriation of particular diseases to the Christian saints:

Against sore breasts—Saint Agatha.

Against scald head—Saints Agnan and Tignan.

Against inflammations—Saint Anthony.
Against toothache—Saints Apollonia and Lucy.
Against lunacy—Saint Avertin.
Against stone and poisons—Saint Benedict.
Against quinsy—Saint Blaise.
Against sudden death—Saints Christopher and Mark.
Against sore eyes—Saint Clara.
Against colic—Saint Erasmus.
Against dropsy—Saint Eutrope.
Against gout—Saints Genow and Maur.
Against diseases of children—Saint Germanus.
Against sterility—Saints Giles and Hyacinth.
Against hydrophobia—Saint Herbert.
Against syphilis—Saints Fiage and Job.
Against epilepsy—Saint John.
Against back and shoulders—Saint Lawrence.
Against stone and fistula—Saint Liberius.
Against scab or itch—Saints Maine and Martin.
Against danger in parturition—Saint Margaret.
Against palsy and convulsions—Saint Marus.
Against sore eyes and headache—Saints Juliana and Otilia.
Against ague—Saint Pernel.
Against coughs—Saint Quintan.
Against hæmorrhoids—Saint Phorie.
Against plague—Saints Rochus and Sebastian.
Against demoniacal possessions—Saint Romanus.
Against madness—Saint Ruffin.
Against chlorosis—Saint Venire.
Against lameness—Saint Wolfgang.

Æsculapius, the supposed founder of the art of healing, is spoken of by Homer as the blameless physician whose sons were serving in the Greek army at the siege of Troy. But the Greeks built temples to his memory and worshiped him as a God, believing that he was the son of Apollo. The cock was commonly sacrificed to him in the temples, but a peculiar breed of serpents was the favorite type. The priests of these temples formed the race of Asclepiadæ or children of Æsculapius, and were the only regular physicians of antiquity. The sale of these Æsculapian or holy snakes was a source of revenue to the priests or physicians, who kept them about the temple. Æsculapius, under the image of a serpent, was worshiped by the Romans; and the Egyptian Æsculapius, according to the statement of Eusebius, was worshiped under the form of a divine serpent.

The serpent was considered by all oriental nations, not only the most cunning of all animals, but likewise as immortal. The Chaldeans had a fable concerning a quarrel between God and a serpent. A serpent was borne in procession at the feast of Bacchus. In Arabia, India and China, the serpent was regarded as the symbol of life; and the emperors of China accordingly bore upon their breasts the image of a serpent long before Moses elevated the serpent in the wilderness to cure the snake bites of the children of Israel. In ancient times, or rather when the world was young, it was a very common thing for animals to be endowed with the gift of speech. Our mother Eve expressed no surprise when the serpent spoke to her; and Balaam, after cudgeling his donkey, was not the least disconcerted when the animal expressed in well-chosen words, dissatisfaction at the treatment it received.

In Hindoo mythology, the chief God, Vishnu, is represented in his last sleep at the end of the world reclining on "Ananta," the serpent of eternity. The Caduceus is a winged wand entwisted by two serpents. It is a symbol of peace and prosperity. The rod represents power, the serpents represent wisdom, and the two wings diligence and activity. It is the emblem of medicine, and can be found on the title page of most medical works, and embroidered on the coat sleeves of stewards in military hospitals.

We also know that Aaron cast down his rod before Pharaoh and it became a serpent, and the Magi of Egypt cast down their rods, and they also became serpents. But Aaron's rod proved superior to the rods of the Magi by swallowing them up. Whatever doubts may be entertained respecting the arts of early civilization that are supposed to be lost, there can be no doubt that the art of telling snake stories is rapidly passing away, either from the supply furnished by antiquity being all that is required, or from a want of sufficient encouragement to continue the production.

The early practice of medicine was involved in the belief that disease was of celestial origin and required divine interposition for its relief. Especially was this the case in epidemic diseases. Religion and medicine were practiced together; and through the instrumentality of priest-physicians, sacrifices and votive offerings of value served to enrich the temples and appease the anger of the immortal Gods at the same time. Charms, talismans and amulets were resorted to for individual ailments, and to ward off disease. The proficiency of the healing art in early times could not have been very great, and may be dispatched in a few words. It appears to have been confined to surgery. Machaon and Podalirius, the two sons of Æsculapius, were not called to cure or stop the plague, but only to heal wounds. This was an art of the utmost importance in those warlike times; accordingly Homer, when he estimates the value of the different professions, pronounces surgery equal in value to many occupations of a different class. They had, as might be expected, considerable knowledge of external anatomy, which was the only part of the art with which the most enlightened of the ancients were acquainted.

Accordingly Homer has always been celebrated for his variety of wounds, and the scientific manner with which he dispatches his combatants.

Their process was to bathe the wound in warm water, suck out the blood, and apply a dressing of bitter herbs.

"Then suck'd the blood, and sovereign balm infused
Which Chiron gave, and Æsculapius used."

They used the verdigris of their bronze weapons as a styptic, which will account for the story of Achilles curing Telephus with the rust of his lance. It is efficacious in cleansing wounds, and consuming proud flesh, and still holds a place in the *materia medica.* Incantations and charms were thought to have great power in healing wounds.

"With bandage firm Ulysses' knee they bound,
Then chanting mystic lays, the closing wound
Of sacred melody confessed the force;
The tides of life regained their azure course."

As to diet, Machaon when wounded swallowed a drink composed of wine, cheese and barley flour.

Fumigation was practiced to a great extent, especially with sulphur after the sacrifice of animals. Ulysses used it to purify the rooms of his house after slaughtering the suitors of Penelope—

"With fire and sulphur, cure of noxious fumes
He purged the walls and blood-polluted rooms."

The Iliad and Odyssey may be considered as a storehouse of the sum of human knowledge up to the time they were written through which the actions and teachings of the most skillful men in every department of life have been handed down to us. Yet in these immortal epics the teeth are only referred to as little barriers opposed by nature to the unruliness of the tongue, and to the abuse of speech.

All that is now known concerning the early history of medicine or surgery, is derived from the works of Hippocrates, or his family, or his pupils.

The works indisputably written by Hippocrates, display an extent of knowledge answering to the authority of his great name. His power of observation and vivid descriptions have never been excelled. His description of the face of the dying is still retained in our medical works in the original terms, and has never been improved. It was he who first separated the pursuits of the physician from those of the priest, by substituting sanitary measures for votive tablets, talismans and charms, to appease the wrath of the Gods. When we consider the age in which he lived—400 B. C.—and the difficulties under which he studied medicine, we cannot fail to admire the great advance he made. His merit is conspicuous in rejecting the superstitions of his time by teaching his disciples to impute a proper agency to physical causes. It was to the interest of those who were connected with the temples to refer all diseases to supernatural agency, and any contradiction of such doctrines, any substitutions of the natural for the supernatural, must have met with great reprehension. Yet the opposition seemed to weigh but little with this great physician. He pursued his practice without giving himself the least concern in that respect, and in doing so set an example to all who should succeed him in his noble profession, and taught them not to hesitate in encountering the prejudices and superstitions of the present for the sake of truth. We should reverence the memory of Hippocrates for the complete manner in which he accomplished his object.

While Hippocrates investigated all branches of medicine, the diseases of the mouth and teeth did not escape his attention. He observed the teeth in their healthy and diseased condition, from the time of their appearance until they were lost in old age.

He observed that teeth in similar conditions will erupt with less difficulty in winter than at any other season ; that teething children with open bowels are less subject to convulsions than those in whom the bowels are constipated, and children who sleep well have little difficulty in erupting their teeth. He directed attention to the influence that diseased teeth have in diseases of the breast, throat and ears, which diseases can only be cured by removing the teeth. He observed that the seasons seemed to affect the teeth. The accumulated and retarded flow of the fluids in these organs he endeavored to remove and disperse with masticatory remedies; if these were of no avail he employed pepper (bags?) in combination with castoreum. Cold drinks he believed to be injurious to teeth. He taught that lingual abscesses were frequently caused and maintained by the crenated edges of decayed or broken teeth. Accumulations of pus and morbid growths on the gums were not unknown to him, and he assigned these evils to the bad condition of the teeth. He studied the diseases of osseous tissue and first communicated observations on necrosis of the maxillary bones, as the following passage indicates:

"In consequence of a diseased tooth the maxillary bone of the son of Metrodorus become disorganized, the gums grew exuberantly, but the suppuration was moderate. He lost the molars and the maxillary bone."

The bad smell of the mouth he endeavored to improve with a tooth powder and an aromatic decoction of wine. A painful and decayed tooth that was loose he advised to be removed, which operation he considered very easy and unimportant. If however the tooth was firm, the pain caused by the tooth should be relieved by cauterization. Loose teeth he advised to be tied to their neighbors by means of gold or silk threads. He mentions aphthæ among the diseases of dentition. He recommends cleansing the teeth as a precautionary measure against decay; to avoid indigestion and the frequent repetitions of emetics; to guard against things that are difficult to break, and such substances as set the teeth on edge, and everything that is cold or putrid. His views respecting the origin and formation of the teeth are extremely crude, as might be expected at a time when human anatomy could not be tolerated, much less encouraged. Five hundred and ninety-one years later human beings were sacrificed in the amphitheatres of Rome for the amusement of the people, and while these scenes were being enacted, Galen had to examine in secret a few human bones for the purposes of science. Hippocrates says:

"There is a glutinous increment from the bones of the head and jaws, of which the fatty part is dried by heat and burnt up, and the teeth are made harder than the other bones, because there is nothing cold in them." And he held the opinion which many authors have maintained since his time, that to have a greater number of teeth than ordinary, is a sign of longevity.

We are indebted to Herodotus, the Greek historian, who was contemporary to Hippocrates, for the information that the Egyptians practiced the art of dentistry ; but whether a rational dental or medical pathology was known to them we have no means of discovering. We have the statement of Herodotus in his second book "Euterpe," "that the art of medicine was divided among them (the Egyptian priesthood); each physician applied himself to one disease only. All places abounded in physicians. Some physicians for the eyes, others for the head, others for the teeth, others for the parts about the belly, and others for the internal disorders." This is the only statement made by Herodotus in regard to the treatment of the human teeth. No mention whatever as to the manner of treatment either of diseases of the teeth or other diseases.

The art of medicine was divided among the priesthood as in later times, and in other countries ; and as their priesthood consecrated dogs, crocodiles, cats and onions, their art in treating disease could not have been very scientific, according to our understanding.

But through the acquired and traditional knowledge of the priests and patriarchs who devoted their whole time, and prided themselves in their medical skill, remedies must have been accumulated possessing more potency than talismans, charms, amulets and votive offerings. Were it otherwise, their reputation as physicians could never have been established. The practice of sacrificing animals must have given the priests a rough knowledge of anatomy, and the cleansing or the purification of the altars and temples after the sacrifices, discovered to them the use and the necessity of anti-bromics and disinfectants, by fumigation or otherwise ; for however agreeable the steam and smoke that would arise from the burning entrails of a dozen oxen might be to the Gods, the fumes from such a mass of animal and vegetable matter would undoubtedly be offensive to the nostrils of even a savage mortal. It does not appear at this period of the world's history that surgery was practiced to any extent, and the circumstance that no instruments that can be fairly called surgical have been found among the many implements discovered in the tombs of Egypt, would indicate that proficiency in the art of surgery could not have been very great. It may be inferred that a people capable of producing so many stupendous and imperishable monuments, were equally capable in other directions of culture.

This however does not necessarily follow, for constructive art is not incompatible with the grossest superstition. Mankind built temples and embellished them, long before they constructed an alphabet. Religions of all kinds from the lowest forms of fetishism to the most exalted, have always made the greatest demands on the genius and energy of mankind; and have been the most liberal patrons of decorative and constructive art.

In conclusion, permit me to say that for some time I have been of the opinion that there is a growing desire in our profession to be more conversant with the ancient, as well as the modern history of dentistry in its several departments—that there is a conviction that the literature of dentistry has been neglected. It is to be hoped that the time is not far distant when our profession everywhere will be convinced of the importance of becoming more intimately acquainted with the researches and views entertained on the subject of dentistry by some of the most intellectual men the world has ever produced. It is to be hoped that the profession will see the advantages and necessity of a dental cyclopædia or summary of dental knowledge; not a system, but a work that would rescue valuable papers relative to dentistry, that are now resting in comparative obscurity in the archives of scientific societies, and that are now in a manner lost to the profession. When this is accomplished, it will be seen that the profession of dentistry, as well as medicine, is more indebted for its substantial progress to the general anatomist, and the surgeon, than to any other quarter. One great advantage the profession would have in the possession of such a work would be that when a new theory was advanced, it could be tested by comparing it with doctrines of a similar nature advanced in former times. Certainly every age should profit by the experience of the preceding ones; but without a record of what has been accomplished each investigator commences a new series of trials, and wanders over the same ground in search of truths which have been long ago discovered; or adopts theories that have been long ago discarded. The views of our predecessors may be justly regarded as beacon lights set up to guide our footsteps from the pitfalls of error.

The history of medicine as well as dentistry, from the earliest periods up to the seventh century, can be found in the seven books of Paulus Ægineta, translated from the original Greek into English by Francis Adams, in three volumes, for the Sydenham Society, London, 1844.

An historical survey of the dental art by Dr. George Carabelli, Vienna, one volume, 1844. This work is in the German, and includes the progress of the dental art in most of its departments, to the date in which it was written.

Historical researches on the development, structure and diseases of the teeth by Alexander Nasmyth, F. L. S. F. G. S., London, 1839. There are many other short histories attached to works on dental surgery by way of introduction, but the works that I have named comprise all that can be said on the subject up to the date of their publication.

It is now nearly fifty years since these works were given to the profession, and publishers of works of this character are seldom called upon to issue second editions.

Within the last fifty years newer and surer methods have been adopted in scientific pursuits. Well-trained men and women with improved facilities have devoted their whole energies to the investigation of special subjects, and the result has been the extraction of whatever truth existed in former theories and systems, and the establishment of every department of inquiry on a more scientific basis.

Escharotics and Coagulants.

By Dr. A. W. Harlan, Chicago.

Escharotic—A substance which produces an eschar. A caustic. (Webster)—Caustic, destructive to the texture of anything; burning, corrosive, pungent, to burn. Applied to animal substances it burns, corrodes or destroys the texture, an escharotic. "Escharotics, called also cauterants, are medicines which destroy the structure and vitality of the parts to which they are applied. The eschar which their application produces is followed by inflammation and suppuration of the surrounding tissues, by which the slough is separated from the living parts. They are employed—1. To effect the destruction of morbid growths, warts, condylomata, polypi, fungous granulations, etc.—2. To destroy the virus of rabid and venomous animals, and of chancres and malignant pustules, and to prevent their absorption. 3.—For the cure of violent inflammation, by their substitutive action, as when they are applied to the mucous or cutaneous surfaces, in gonorrhæal ophthalmia, erysipelas, poisoned parts, carbuncles, etc. 4. To stimulate indolent sinuses, ulcers, etc., where this influence is also of a substitutive character. 5. To form issues. 6. To remove morbid heterologous growths, as lupus, cancer, warts, etc. (Biddle). An escharotic applied to a morbid growth or the healthy tissue incinerates it, and renders it unfit for further use. The eschar will be thrown off—it cannot be converted into living tissue by digestion or absorption. It is useless to expect it to be reconverted into pabulum. It is a foreign body which cannot be encysted and remain harmless. It is waste. It can never again serve a useful purpose. To apply an escharotic in the sense in which it is here understood and defined, is to forever destroy the part to which it is applied. When an escharotic is applied to a living pulp or the mucous, cutaneous or peridental membrane, the part is destroyed, it is not converted into anything that will perform the function of the destroyed part. This ought to be thoroughly understood.

Classification of caustics—(Farquarson).

PENETRATING CAUSTICS.	CIRCUMSCRIBED CAUSTICS.
Acetic Acid.	Dried Alum.
Bromine.	Dried Zinc Sulphate.
Chromic Acid.	Heat.
Mercuric Nitrate Solution.	Potassa withLime(ViennaPaste)
Potassa.	Silver Nitrate.
Sulphuric Type-Acids.	Zinc Chloride.
To which may be added:	
Caustic Soda and Lime (London Paste).	Sodium Ethylate.
	Carbolate of Potash.
Arsenic Acid.	Aseptol.
Phosphoric Acid.	Nitrate of Zinc.
Bichromate of Potassa.	Nitro-Muriatic Acid.
Arsenious Oxide.	Electric Cautery.
Cold.	

To the above list, which is long enough, no more additions of a useful character need be made, as the remedies cannot become readily available for instant use. "Acids unite with albumen in different proportions, producing acid albumins. When mixed with blood they not only precipitate albuminous substances, but decompose hæmoglobin, forming a substance which holds oxygen with more tenacity than hæmoglobin. They coagulate myosin and produce instantaneous rigidity in muscles. Sulphuric and phosphoric acids have, besides this chemical affinity, a strong attraction for water, and completely decompose the tissues to which they are applied, so that they are powerful escharotics. Nitric acid does not readily redissolve the albumen precipitated by it, and thus forms a barrier to its own action, so that it does not penetrate so deeply as sulphuric acid." (Brunton). In Dental Surgery the use of escharotics for their destructive effects is not very common, most practitioners relying on the knife for the purpose of removing small or large tumors and other excrescences. I do not intend to dwell on the general use of escharotics at great length, but rather devote my time to pointing out the abuses of escharotics in minor dental surgery. The most common abuse of escharotics may be found to consist in their application to exposed pulps and the peridental membrane. In this connection it may be well to remark that this is not the form of abuse of escharotics which needs the severest condemnation, but it is in repeated application of such powerful medicaments in full strength, or only slightly diluted, that the greatest danger lies. Their application to such finely organized structures as the dental pulp and the peridental membrane, unless for purposes of total destruction, I deem to be unwise and contrary to our knowledge of the properties of escharotics. Escharotics in full strength should never be used on the normal dental pulp, the mucous or peridental membrane. Escharotics are not indicated in pulpless teeth. A pulpless tooth may serve as a channel through which escharotics may be pumped or syringed into diseased tracts beyond the apices of roots, but if you wish to bleach a tooth well, do not use an escharotic in contact with the dentine, as it will prevent the diffusion of bleaching agents, until the charred organic matter is first mechanically removed. Powerful escharotics disorganize blood and blood serum, pus and living tissue as well, whether it be normal or pathological, hence the necessity for caution in their application to an already dead pulp, the bleeding end of the stump of a pulp, a serous exudate or pus flowing from an abscess beyond the apex of a root. Escharotics should be used to destroy exuberant growths, for stimulation of sluggish parts, and to prevent the absorption of pus or septic matter.

Coagulants, substances which produce coagulation. To cause to change into a curd-like or inspissated state, to thicken, concrete, curdle. (Webster). All alcoholic tinctures are coagulants. All fluid extracts containing alcohol are coagulants. Nearly all escharotics, even in very weak aqueous solution, are coagulants. Some other substances (astringents) may coagulate albumen or blood serum to a degree unexpected by the users, as I shall endeaver to show at the conclusion of this paper. Rubefacients and vesicants are not always coagulants. Example, essential oils, chloroform, ether, etc.

Coagulation is sometimes produced by a feeble oxidation as by the air. In other cases by the formation of albuminous pellicles, as may be seen after the application of tincture of iodine or dilute solution of silver nitrate. Carbolic acid dilute, five per cent or 95 per cent produces a carbolate of albumen; this is a chemical change. Other coagulants act by their chemical affinities on the tissues to which they are applied, as by the abstraction of water, thereby concreting the substance acted upon. Coagulation does not always prevent the coagulum from being converted into new tissue, as may be noted in the healing of arteries and other well substantiated cases. The coagulum may be absorbed without elimination entire. Coagulation is a necessary condition before some articles of food can be digested. Some coagula may be converted into a lower order of tissue which will serve the purposes of protection, as witness the successful capping of pulps. A coagulum is however an effectual barrier to the immediate penetration of medicaments in roots of teeth for the purpose of disinfection, and should not be produced. It may become a source of future trouble by disorganizing in the presence of anærobic microbes.

Coagulation of blood serum or a serous exudate is one of the factors in pulp preservation. A successful treatment of many lesions of the mucous membrane and peridental membrane, depends on the degree of coagulation produced by the application of coagulants. Coagulation is defined to be protective, not destructive. Violent escharotics, tissue destroyers, if used at all as coagulators, must be largely diluted. Many of the true esclarotics are not freely soluble in water, hence the difficulty of properly diluting them to serve as useful coagulators. A pulp accidentally uncovered in excavating, but not bleeding, does not need a coagulator to protect it from the air, as the air is a coagulant in a minor degree.

Hence the $^{1}/_{1000}$ bichloride solution may be used without danger to its external covering. When the pulp is exposed and bleeding, first arrest the hæmorrhage by the use of a true astringent, then apply a feeble coagulating stimulant and cover without pressure. When suppuration is found, the neutral peroxide of hydrogen is indicated, which should be followed with a combination of non-irritant dressings, as Dr. Black's 1-2-3, solution of iodoform in ether or iodoform with essential oils. Carbolic acid, 95 per cent, is not indicated in a case of this kind. Aqueus solution of beta-naphthol or hydro-naphthol may be used. Wood creosote or guaiacol, likewise. A 10 per cent solution of resorcin or pheno-resorcin may be used with good results. Mucous abrasions, erosions and "canker" sore mouth need to be touched with glycerole of thymol, full strength, resorcin, acid aromatic sulph., 1-2-3; solution of permanganate of potash, $^{1}/_{500}$ corrosive sublimate or similar stimulating coagulants. That degree of coagulation of the surfaces of pockets around the roots of teeth which is best, is attained by the direct application of medicaments with a syringe or the introduction of finely-pointed medicated gelatine bougies, as recommended by Dr. W. B. Ames. Coagulation in cases of this kind, must not be destructive. When possible, the coagulation should be accomplished by the use of substances soluble in water or alcohol—preferably in water. If the coagulant is dissolved in an acid it may cause trouble by rendering the cementum sensitive, and redissolving the coagulum before the acid is dissipated by the admixture with saliva. Coagulation should follow the cleansing of surfaces, not precede it. The coagulum should not be disturbed, nature will take care of that. Coagulators should not be applied to the pulp of a tooth every day, nor on the mucous membrane. It is not good practice to inject coagulators into pyorrhœa pockets oftener than once in four days. A coagulator should possess the following properties: Stimulating, alterative, anæsthetic, disinfectant and tonic when applied to assist in a return of the tissue to a normal condition. Coagulators should not be burners of tissue. Coagulators of albumen must be kept out of pulpless teeth. No necessity exists for their use in a pulpless tooth. Coagulation always prevents diffusion of vapors and vaporizable substances. Non-coagulators are indicated in this class of cases. Coagulators may be used in teeth containing living pulps as in many cases they are good pain-obtundens. A coagulator sufficiently powerful to curdle egg-albumen is potent for the arrest of pain in a living tooth. Powerful coagulators should not be injected into deep sinuses or abscesses having no external outlet, because of the pain produced and the danger from inflammation of subjacent parts. Such cases need to be washed or irrigated with neutral waters or very feeble coagulators in the beginning and these washings may be frequently repeated when no acute inflammation exists. The antrum of Highmore is a cavity into which it would be hazardous to inject a considerable quantity of a 10 per cent solution of chloride of zinc, or a 20 per cent solution of acid aromaticum sulphuricum. Weak solutions of coagulators are indicated in chronic disease of the mucous lining of the antrum, until a decided effect is sought to be produced by medication, when double or triple strength of the medicament is indicated. Syphilitic sores, when painful, must be cauterized or their surfaces coagulated, concreted. I will now perform a series of experiments on flesh with escharotics. The tissue used is from the calf. I will next show the action of coagulants on blood serum and egg albumen. These experiments will be followed with an exhibition of the action of non-coagulants on blood serum and egg albumen :

EXPERIMENTS—ESCHAROTICS.

Chloride of Zinc,	(Liquified)	On egg-albumen.
Chromic Acid,	“	“ “
Caustic Potash,	(Full Strength)	On Veal
Arsenic Acid,	“ “	“
London Paste,	“ “	“
Vienna Paste,	“ “	“
Phosphoric Acid,	“ “	“
Bichromate Potash,	“ “	“
Acid Nitrate Murcury,	“ “	“
Silver Nitrate,	“ “	“
Nitro-Muriatic Acid,	“ “	“
Sodium Ethylate,	“ “	“
Caustic Soda,	“ “	“
Glacial Acetic Acid,	“ “	“
Bromine,	“ “	“

COAGULANTS.

Peroxide Hydrogen,	(Aqueous Solution)	Egg-Albumen.
“ “	“ “	Blood-Serum.

Corrosive Sublimate,	(Solution 1-500)	Blood-Serum.
“ “	“ “	Egg-Albumen.
Alcohol,	(Absolute)	“ “
Carbolic Acid,	(95 per cent)	“ “
“ “	“ “	Blood-Serum.
Iodide Zinc,	(Liquified)	“ “
“ “	“	Egg-Albumen.
Campho-Phenique,	(Full Strength)	“ “
Black's 1-2-3,	“ “	“ “
Carbolized Potash,	“ “	“ “
“ “	“ “	Blood-Serum.
Tincture Iodine,	“ “	“ “
“ “	“ “	Egg-Albumen.
“ “ Comp,	“ “	“ “
“ Benzoin “	“ “	“ “
“ Myrrh,	“ “	“ “
“ Opium,	“ “	“ “
“ Chloride of Iron,	“ “	“ “
Dialysed “	“ “	“ “
Aluminium Chloride,	(Liquified)	“ “
Aromatic Sulph. Acid	(Full Strength)	“ “
“ “ “	“ “	Blood-Serum.
Sulphate Copper,	(Liquified)	Egg-Albumen.
Sulphate Zinc,	“ 1 to 8	“ “
Creolin,	(Full Strength)	“ “
Creosote,	(Morson's Wood)	“ “
Guaiacol,	(Full Strength)	“ “
Spirits Camphor,	“ “	“ “
Tannic Acid,	(Aqueous Solution)	“ “
Gallic Acid,	“ “	“ “
Hydro-Naphthol	“ “	“ “
Beta “	“ “	“ “
Menthol,	(Alcoholic Solution)	“ “
Oil of Cade,	(Full Strength)	“ “
Resorcin,	(10 per cent)	“ “
Vinum Opii,	(Full Strength)	“ “
Listerine,	“ “	“ “
Soziodol,	(Aqueous Solution)	“ “
Cologne Water,	(Full Strength)	“ “
Oleo-Resin Kava-Kava,	“ “	“ “

Salicylic Acid,	(Aqueous Solution)	Egg-Albumen.
Lactic “	“ “	“ “

NON-COAGULANTS.

Oil Cloves,	(Full Strength)	Egg-Albumen.
Oil Cinnamon,	“ “	“ “
Oil Cassia,	“ “	“ “
Oil Turpentine,	“ “	“ “
Oil Camphor,	“ “	“ “
Oil Cajeput,	“ “	“ “
Oil Sassafras,	“ “	“ “
Oil Gaultheria,	“ “	“ “
Oil Sanitas,	“ “	“ “
Tereben,	“ “	“ “
Carbol-Camphor,	“ “	“ “
Iodoform and Ether,	(Saturated Solution)	“ “
Boracic Acid,	(Aqueous “	“ “
Chloroform,	(Full Strength)	“ “
Labarraques Solution,	“ “	“ “
Liquid Vaseline	“ “	“ “
Sodium Fluo-Silicate,	(Aqueous Solution)	“ “
Permanganate Potash,	“ “ 1 to 8	“ “
Eugenol,	(Full Strength)	“ “
Eucalyptol,	“ “	“ “
Myrtol,	“ “	“ “
Benzol,	“ “	“ “
Toluol,	“ “	“ “
Glycerole Thymol	“ “	“ “
Boro-Glyceride	“ “	“ “
Phenol Sodique (Wildman),	“ “	“ “

NOTE.—Chloroform after it has been in contact with egg-albumen for some hours appears to be a feeble coagulator, one specimen of oil of cloves behaved in a similar manner. Eugenol after it has been exposed to the air for some months will produce a filmal coagulation, very slight it is true, but sufficient to rank it as a feeble coagulator.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY—DISCUSSION ON OPERATIVE DENTISTRY.

(*Continued from page 366.*)

Dr. C. S. Case, Jackson, Mich.: In filling proximal cavities between bicuspids and molars, Dr. Noyes, with his usual thoroughness, has made it almost unnecessary to say more upon the subject. There were two points, however, upon which I question the propriety of proceeding as the Doctor has described; and while I do not doubt but that they work successfully with him, I believe their general adoption would be unadvisable.

The first is relative to inserting an instrument into the cavity, and breaking outward the over-hanging margin of enamel along the cervical border, where the decay is quite extensive. While I believe it always desirable to remove enamel *unsupported by dentine* along this border, I prefer to cut it carefully away, and smooth with fine-cut burs or corundum points, rather than trust to the uncertainty of "enamel cleavage."

The second is relative to depending upon orange-wood wedges with which to obtain the proper amount of separation and perfect exposure of the cervical margin—where the decay has extended beneath the gum. A better practice, in my estimation, is in the use of a matrix—preferably of aluminium. I hardly think this material is fully appreciated for matrices. It can be easily cut, bent and pounded to any desired shape or thickness, and is of sufficient rigidity to resist all required force. For the fillings under discussion, thin and curve one edge of the matrix so that it will pass between the gum and the cervical margin of the cavity. It should fit against the root, and bend partially around the tooth. This should be held firmly in place by a wedge, but not driven in at this stage of the operation with a view of *separating* the teeth. If the matrix is grooved on the outside, the wedge will not be forced against the gum. Use soft gold, tin, or tin and gold, and direct the packing force toward the matrix, filling first along the margin, and building the material back into the cavity as you progress. When the cavity is partially filled, remove wedge and matrix, and finish the surface of your partial filling. Now insert a wedge, or preferably a Perry separator, resting it on one side against the filling, and separate the teeth sufficiently to fully contour the crown.

Dr. Patrick—I am not going to occupy your time by giving you instructions how to pack gold, but will simply say the more solid you pack it the better.

I desire more particularly to call your attention to one of the principal causes of failure in filling proximal cavities of bicuspid teeth. I think it is in not thoroughly understanding the exact anatomy of the part concerned in the operation.

I will draw as well as I can a transverse section, at the neck, of a bicuspid tooth. I will endeavor to show you as clearly as possible why it is difficult to fill a cavity in that situation. Notice the shape of the tooth at this point. There is a depression on either side which gradually increases toward the apex of the tooth, forming a septum between the two canals. Generally there is a slight blending between these canals, giving something like a dumb-bell form. I care not what kind of matrix you use, you never can adapt it to this depression. You will have a shoulder there which it is impossible to get rid of unless you use the little saws of our worthy president, or one of the draw-files.

Dr. Crouse—I apprehend that the most difficult thing is finishing the filling after it is made. It is not an easy matter to pack gold properly at this point; it can be done better by other force than the mallet—a force by which you can use the opposing teeth as a fulcrum, and get heavy pressure by a turn of the instrument.

I have very little use for matrices. I prefer in such cavities to start the filling with a slender border of non-cohesive gold. One of the essential elements in these cases is plenty of room, but how are you going to get it? We must use one or both forms of separator, the Parr and Perry, and I prefer the Parr because if you want to use force quickly, you get it much more easily by this instrument.

Another point, and an important one in my opinion, is the white, chalky condition of the teeth. You have undoubtedly noticed a little streak of white pearl or decalcified enamel running beyond a proximal cavity in the form of a T on each side. What would you do with it? I have been in the habit of buring out and carefully filling that portion of the cavity first, then I have, as it were, a plain cavity to finish.

The sandpaper discs of various shapes have been to me invaluable. I am a strong advocate of contouring proximal surfaces where the patients take proper care of them.

There is another difficulty which occurs with proximal cavities. You will frequently find extensive caries under the enamel cusps. You will have large undercuts, and such undercuts are difficult to fill with gold. It is good practice to fill these spaces first with oxychloride or oxyphosphate of zinc, and I prefer the former, making the cavity more simple for the gold.

Dr. Johnson—When Dr. Crouse alluded to the use of the matrix, I knew very well he would condemn it. I have used it in certain cases with success, and I spoke in favor of it a year ago.

At the twenty-fifth anniversary meeting of the Chicago Dental Society, I had the honor of giving a clinic. I filled a distal cavity in a bicuspid, using a matrix. Dr. Crouse was one of the Executive Committee, and when the cavity was half filled—just about the time when criticism should be made—I called him up and said, "I want you to criticise that filling." He looked at it and said, "I have no criticism to make on it," and now he comes here with the same old story and condemns the use of the matrix.

Dr. Crouse—I do not use it because I can get along better without it.

Dr. Johnson—I have such confidence in your operative ability that, if there is any man in this society that can use a matrix, you can if you wish.

There is another point : I understood you to say that you would leave an overhanging wall of enamel here at this point and fill with cement. It seems to me we should not leave the wall overhanging to the extent indicated by this diagram.

I agree with what has been said about sandpaper discs. I do not think they are used as much as they ought to be.

Another point that has not been mentioned, is the trimming of the margins of cavities just before introducing the filling. Some one, I think, has alluded to trimming these margins with burs. You can make a better margin by the expert manipulation of sandpaper discs than with a bur, and the work can be done in half the time. If a filling overlaps the border at the top, I cut away the buccal and lingual corners ; I can trim it in a few moments with a sandpaper disc, leaving a nice surface and margin.

Dr. Case mentioned the use of small corundum points for this purpose. The S. S. White Dental Manufacturing Company have made small diamond and copper points of different shapes, and I apprehend that these are going to be useful appliances for beveling margins. Perfumed vaseline has been recommended to make discs pliable, and I find it useful.

Dr. Patrick—The last speaker is so enthusiastic in regard to the use of the matrix that he is under the impression that I have abandoned it, but I wish to relieve his mind, for I use it frequently. I use it for all it is worth, and not a particle more.

Dr. Tibbetts—Failure after the operation, is due to some pathological or traumatic cause. To obviate this possibility prepare the cavity with a view to anticipating such a result. I think one of the greatest sources of failure has not been mentioned, namely, the point of contact with the contiguous teeth. Decay does not occur in the first instance at the point of contact, but immediately below; where particles of food and secretions lodge and decompose. It is always better to cut below the line of retention of food, because secondary decay is prevented. To avoid the possibility of failure from the retention of food, it is essential to cut away enough of the proximal surfaces to prevent recurrence of decay when the teeth are in position.

A traumatic source of failure may occur in a very perfect filling by the surfaces of the teeth rubbing together in the process of mastication. Some of the most beautiful operations that are made, where an overhanging edge of enamel has been left, will soon return with the corners of the enamel broken off, necessitating a secondary operation. A full and free cutting of the enamel walls almost parallel, facilitates the operation of packing the gold.

The speaker then illustrated on the board his method of preparing and filling a cavity as described.

Dr. Sitherwood—I wish to endorse what Dr. Crouse has said. I suppose every gentleman present knows how to prepare a proximal cavity in bicuspid teeth. But why must we use matrices? I had the misfortune—or, perhaps, good fortune—in my early life to learn a trade that required more manual dexterity than the filling of any proximal cavity. Why use a matrix when you can fill a cavity without it just as well? For separating I use a little cotton saturated with melted wax, leaving it twenty-four hours. This will separate the teeth sufficiently. We may, if we wish, use a Parr or Perry separator. It requires manual dexterity to fill teeth properly with any form of gold, no matter what kind of instrument is used, whether hand plugger, automatic plugger, or a mallet. We should not confine ourselves to one method or instrument in packing gold, but use whatever seems best adapted to the case.

I do not care to use matrices, for I can fill teeth more quickly without them.

Dr. Brophy—Some of the remarks made this evening I heartily indorse, others I wish to criticise.

With reference to matrices, there is not an instrument made by any man that will serve our purpose in all cases. Each instrument we have we use for a certain purpose. We cannot use one plugger to fill all cavities. Statements have been made to the effect that it is essential to have a matrix adapt itself to the proximal surface of the cavity closely. This is what a matrix should never do. I hope I shall hear that statement no more. If it is properly adjusted it never adapts itself to the proximal surfaces involved. If it should be so adapted, even approximately, the result will be a failure. The dentist who seeks to force a matrix to the border, and hold it there, certainly has not learned how to use matrices. I think one of the most common causes of failure in filling proximal cavities in bicuspids and molars is in the preparation of the cavity itself. In preparing a cavity we often leave sharp angles. We may polish them off a little with sand-paper, but we are apt to leave them. When we begin to insert gold these angles are pulverized under the force of the plugger. The filling may look fairly well when finished, but disintegration follows at these points.

Dr. Morrison, of St. Louis—To my mind the popular cause of failure is that when a dentist discharges his patients he fails to give them the proper advice as to the care of these surfaces. We all have doubtless observed that where patients care for these surfaces they do not decay. There is no doubt that fillings are made every day that should save these teeth, if dentists would do their duty by insisting upon proper care.

Dr. Koch—I have a criticism to make on the remarks of the last speaker. He says the cause of failure is, that dentists do not give their patients proper advice as to the cleanliness of their teeth. Now, if this has anything to do with failure at all, I believe it is because patients *do not follow* the advice of their dentists.

Dr. Noyes—It is my belief that the question of cutting out the grinding surface should depend upon the thickness of the overhanging enamel and in relation to the extent or depth of decay in the cavity. We ought to separate the teeth enough so that we can operate upon them. With reference to the opportunity to do the work, of course, if there is no separation we are compelled to cut from the grinding surfaces in order to make the operation. I think we ought to have plenty of room. We should consider the overhanging enamel in relation to the depth of decay. The extension of cavities is most necessary, not at the beginning of the surface intrinsically, but toward the lingual and buccal walls in the direction of the natural extension of decay, and there is where the failure to make sufficient cutting often takes place.

There is one point more I want to touch upon, and that is in regard to the contour of teeth. The extension of a cavity must be as far as disintegration of the enamel has taken place in almost every instance, but occasionally we will see a space or section or two at this point (illustrating) where decay takes place. It is sometimes possible to increase the convexity of the surface at the expense of a portion of this enamel. I do not think the enamel should be cut through to expose the dentine in ordinary cases of this kind, but the tooth may be made more convex by taking off some of the thickness of the enamel on either side, so that the convexity at the point of greatest danger is greatly increased and the disintegration is removed, so that the filling need not be carried quite so far toward the buccal and lingual faces as would otherwise be necessary. It must be admitted that a good many of the cavities filled of this kind will re-decay. It depends more upon patients paying attention to our instructions than any other one thing.

Dr. Case—I hope the gentlemen present did not understand from my remarks that I always use a matrix for proximal fillings. I would like to say to Dr. Sitherwood that for fifteen years I filled teeth without using it. For the last five years I have used it considerably, but with caution, and believe that I fully appreciate the fact that the matrix is a dangerous adjunct in slovenly hands, but nevertheless a valuable one when properly managed.

I would say to Dr. Patrick that I had no idea or expectation of giving instruction to this body of *how* to pack gold. My object being to show how, by directing the force at first, as described, the material could be forced between the smoothed and beveled cervical margin, and the matrix; crowding the latter outward sufficient to fill the cavity a little more than full, for finishing purposes—alternate pieces being wedged back into the cavity to secure a firm and solid position to the whole.

DISCUSSION ON ESCHAROTICS AND COAGULANTS.

OPENED BY DR. J. G. REID, OF CHICAGO.

Dr. Reid—It is certainly very gratifying and instructive to all of us to witness, in such a practical manner, the action these drugs have upon certain tissues which are present in the body.

I do not unduly criticise in saying that the comprehensiveness of this subject is altogether too large to be presented in one paper and make it satisfactory to this Society. I pay the highest compliment to the essayist and to this Society, when I repeat that never in the history of any dental society has such a series of experiments been conducted before it as has been witnessed here to-day.

There is one point in particular which I wish to repeat and emphasize, and that is the careless habit of applying coagulants or other drugs to diseased surfaces without first properly cleansing them. The essayist has not clearly defined to my mind how an escharotic destroys tissue. We see the effects of its action, but how does it operate? We know that certain escharotics act in a chemical way but the chemistry of their activity has not been demonstrated definitely.

I do not believe blood-albumen is so susceptible to coagulation by these medicaments as egg-albumen, neither do I believe that blood-albumen would be so rapidly and extensively coagulated as egg-albumen. Phosphoric acid being an escharotic, you can very readily understand why an excess of this agent in mixing some of our filling materials might work injury to the tissues coming in contact with such a filling.

The essayist has said that an escharotic is an agent that destroys tissue—admit it: if carbolic acid be applied to a pulp, does it destroy it? it does not; it destroys only an exceedingly small portion of it. Again, does carbolic acid in full strength, when applied to a diseased peridental membrane destroy it? no, it destroys only a portion of it; and such portions as have been destroyed are capable of being renewed, provided nature does her duty, and she generally does if left alone and not hampered by over-treatment. All these drugs have a place, and when we use them skillfully and intelligently in combatting disease good results will inevitably follow.

Dr. Black—I wish to express my gratification for the able manner in which this subject has been presented.

We can often gain an understanding of subjects quickly by the aid of the eye, where it would be exceedingly difficult if we were to depend entirely upon words. This is a long series of experiments which have been quickly performed and rapidly passed in review, and it will probably be difficult for many of you to retain a knowledge of what you have seen and heard, or to divide the one from the other. But in your reading and studying of these medicaments in the future, your mind will revert to them and you will retain statements made much easier after having seen such experiments.

There is a good deal of difference of opinion, as I take it, in the profession to-day as to the use of cauterants and coagulants. We have become accustomed to the use of cauterizing agents in the treatment of abscesses. We used them upon a theory which I now believe to be untrue, namely, for their cauterizing action, and we had beneficial results, not knowing that they came from the destruction of micro-organisms. We find that we can destroy micro-organisms with remedies that do not injure the tissues, hence we get better results than before. We may expect differences of opinion for a considerable time, which should be freely expressed on every occasion, but these experiments should be carefully followed out by all of us, that each may make up his mind, not from the discussion alone, but from his experimentation as to the usefulness of these agents in this or that condition presented in our daily practice.

Dr. Patrick—I wish to compliment Dr. Harlan upon the very elaborate description and perfect demonstration of these two classes of agents, escharotics and coagulants; and I feel, also, that it is a compliment to the society to have a member who has sacrificed so much time to bring the subject before us in this manner.

In regard to escharotics, I think it is a well-established fact that agents of any kind act with greater energy on living than upon dead tissue, because there is more energy present to produce the act. You may coagulate a given portion of living tissue much quicker than the same after it has been devitalized.

I had a remarkable experience in regard to peroxide of hydrogen, showing that it is escharotic in its character—destructive. While it cleanses that already diseased, it is also a powerful destroyer of healthy tissue. I applied it to a very large superficial surface, in order to remove the dead flesh, as our surgeons continue to use it, and the more I used the worse the case became. It is not very penetrating, except where there is pus and blood. These are self-evident facts, presented in a self-evident manner. There is no chance for elaboration here—no chance for a man to throw up a paper kite and watch it sail around. We want more of this work. I hope it will be continued.

Dr. Koch—I think these experiments should teach us all some practical lessons. We should avoid the danger of using coagulants in pulpless teeth, for it is evident they seal the openings—the very thing we want to avoid. We wish to allow the gases which are confined in the roots to escape.

Dr. Taggart—I wish to direct attention to two facts demonstrated by these experiments. First, carbolic acid has been a principal remedy in the treatment of root canals, perhaps used more than any other, yet it is one of the most powerful coagulants we have here. Again, chloride of zinc entering largely into the preparation of oxychloride of zinc, which is strongly advocated as a material for filling root canals, yet, according to these experiments, it should never be used.

Dr. Sitherwood—These experiments have been very instructive. I think we should commit to memory the names of these agents, and whether they coagulate or not. For myself, if I cannot remember, I intend to mark those I use in daily practice, by putting a strip of writing on each bottle.

Dr. Ottofy—Some one has asked, "What is the object in conducting these experiments with so large a number of drugs, it being unlikely that any dentist would use all these drugs?" Of course, the drugs are in a classified form, and one of the class is sufficient to give us an idea of the action of the remainder. The opportunity was given here for every one to see the action of the drugs that he is in the habit of using.

From the experiments shown here, we ought to remember that any drug which contains alcohol is a coagulant, we are apt to forget this, and in using the tincture of aconite, for instance, the prominent factor in the mind of the dentist is the aconite, and not the alcohol.

Again, the experiments have shown the difference between the oil of cloves and creosote. I believe a good many dentists use the two drugs interchangeably. In my conversation with members of the profession I was led to believe that their effect were the same, but there is a marked difference between the two. Creosote is a powerful coagulant, while the oil of cloves is not.

I would like to ask the essayist to tell us, in closing the discussion, whether his experiments were conducted on blood serum, or merely blood plasma? It seems the color indicated blood serum. It would be quite different if they were conducted on blood plasma. I would like to know, also, whether the coagulation of serum would be the same as on plasma? And does he expect these drugs to act in a similar manner on albuminoids?

Dr. Brophy—I would suggest to the essayist that, in closing the discussion, he indicate the drugs that would be most applicable in the cleansing of root canals, rendering them aseptic, and in the treatment of abscesses, for it is this class of diseases that we, as dentists, have most occasion to treat. In so doing I think he will make his experiments of the greatest practical value to the members of the society.

Dr. Newkirk—Dr. Sitherwood's suggestion as to the marking of labels, is, it seems to me, very practical. It will be easy for us, as we buy these drugs to test them, as we have seen them tested here to-day. We ought to know, certainly, that those we use are pure.

Dr. Brophy—With reference to creosote and carbolic acid, the statement has often been made in this Society and in others that the first named will not coagulate albumen, but according to the experiments we have seen here to-day it does. Now is this absolutely pure creosote, and has the essayist tested it to ascertain its purity?

In experiments made some years ago by myself, the results of which I presented to this Society, I found that of twenty-five samples of so-called creosote, procured from as many different druggists and supply houses, all but one contained crude carbolic acid, and that one did not coagulate albumen. Whether or no it is true that pure wood creosote will coagulate albumen is a matter of some importance to those who may use it.

Dr. Harlan—Mr. President: I do not know that I have anything of great moment to say. The gentleman who opened the discussion on my paper wanted a definition of coagulant, and the only definition I can give is in the paper.

Dr. Reid—I meant an escharotic.

Dr. Harlan—The definition of an escharotic is the very best that has been made in the English language up to this time. The definition of a coagulant, however, is a little weak, because it is not conclusive. It is a compilation from the very best authorities including my own knowledge of the action of escharotics, and while I do not pretend to be an authority on that subject, yet I say that an escharotic is a substance that *burns, corrodes, destroys.*

You put wood into a fire and it is consumed. There is ash. That is just what results when an escharotic is brought in contact with flesh. It makes ashes out of it.

With reference to carbolic acid I did not include it in my list of escharotics. I did not say it was an escharotic. It is only an escharotic in degree; it is not an incinerator; it does not convert a substance into an ash in the sense that some of the others do. That is not ashes. The substance is not wholly destroyed. It could be digested. A substance that is destroyed cannot be digested because it has nothing in it that can be vitalized. That is the difference between a coagulant and an escharotic according to my idea.

Dr. Ottofy asked me whether that was blood serum or not, and wanted to know the difference between the action of a coagulant on blood serum and blood plasma. That was the best substance I could get in the city of Quincy. A coagulant will coagulate blood serum; it will coagulate the whole blood whether it is separated into two, three or four parts.

The next gentleman (Dr. Brophy) asked me if the creosote I used was pure. It is. There is no crude carboiic acid in it. It is chemically pure, and so vouched for by Morson. I have made the test to distinguish it from carbolic acid, and these tests have been fulfilled, and it is a specimen that has been in my possession for more than three years. It costs $12 a pound, and I would not be likely to spend that much money when I could buy commercial creosote for 15 cents a pound as it is used to-day.

As to pure wood creosote, it is a coagulant which has been demonstrated by more than seven hundred experiments. The mere exhibition of these experiments before you to-day only represent the culmination of hundreds of experiments to find out with different substances what they would do. I do not think that it would be possible for me to lay out at this time a full course of treatment of septic root canals and abscesses with fistulous openings and those having no outlet, because it is unnecessary on the present occasion to attempt to do that we have so much business before us.

I have pointed that out elsewhere in several instances, and have divided this exhibition into three parts:

1. To show the action of escharotics which are named in their regular order.

2. To show the action of coagulants which are named in their regular order, and

3. To show the action of non-coagulants which are also named in their order, and which any gentleman can study by his fireside when the paper is published. If it will do him or you as much good as it has given me pleasure to make these experiments I shall be perfectly satisfied.

DISCUSSION ON DR. KITCHEN'S PAPER.

OPENED BY DR. A. H. FULLER, OF ST. LOUIS.

Mr. President: The very excellent paper to which you have just listened accords so nearly with my ideas, that what I shall say will hardly bear the name of a discussion, but rather a continuation of the subject.

The use of gold as a filling material began to replace that of lead a short time before the beginning of the present century: Yet we have in a work entitled "A Compendium of Italian Surgery," undoubted evidence that it was used by an Italian Surgeon for this purpose as early as the sixteenth century. The introduction of amalgam, the "Amalgam War" and the animosities which it engendered have their place in the history of dentistry, as much as the "War of the Roses" in English history. The last twenty-five years has seen revivals of the contest, and its creeds are still a subject of discussion.

While opposed to the methods of its loudest and most prominent advocates, they being more of a mercantile than of a professional character, I would not relegate it to those from whom it originated—for I am firmly of the opinion that it has its place and its uses in a conservative practice. I certainly recognize the efforts and success of dental societies, and fully appreciate the important part they have taken in the advancement of the dental profession, without them we could not keep pace with the times in which we live; through them we are made acquainted with individual experiences and from these we construct a foundation upon which to build; in fact, they are the basis for an existence as a profession. Through them we may succeed in advancing not only the scientific and practical in dentistry, but by directing our thoughts to that branch of moral philosophy which comes under the head of ethics, may succeed in so uniting our interests that we may be able to protect ourselves from corporations and unjust combinations like the Tooth Crown Co., and in this way be allowed to retain that which justly belong to us. While I am willing to accord to the scientific investigators in our ranks the full measure of our indebtedness, I am of the opinion that the practical men, inventors and mechanics have held their own and should have the recognition that is justly their due; they have contributed equally as much to the advance made. I agree with the writer of the paper, and Dr. Morrison to whom he refers, that crowns are sometimes resorted to when the teeth could be made as useful by filling; at the same time am of the opinion that a much larger proportion of teeth are filled that would have been rendered more serviceable, more presentable and much more durable by being properly crowned. My conservatism or radicalism, whatever you may be pleased to call it has prevented me from acquiring much of a practical knowledge of "bridge-work," so termed.

From what I have seen convinces me that a dentist who expects to attain a reasonably old age, and who is desirous of remaining in one community and continue in the practice of his profession, should select his cases with rare judgment, and perform all operations of this kind with the greatest care and skill. Transplantation and implantation I look upon as being rarely justifiable, and not of much value at the best. Replantation in certain cases is admissible and good practice.

The dental engine has been evolved from the "Merry drill;" a multitude of crowns from the original pivot tooth; many devices for consolidating gold have succeeded hand pressure and hand mallet; methods and means for separating teeth for preventing the ingress of moisture, etc.—in fact the science of operative dentistry as it is practiced to-day, is the growth of the past quarter-century.

The filling of the root canals in teeth, a practice which must have been recognized long since as desirable, and known to be preventive of trouble was in many cases hardly possible before the introduction of the dental engine.

Imagine the preparation of a second molar, a cavity in the distal surface extending to the gum and not involving the crown, but exposing the pulp. Who of us would feel like undertaking such an operation without the engine and its equipments? And many other operations would be equally difficult. The treatment of exposed pulps and the literature which relates to it, is also mostly confined to the period under consideration; and while much has been learned and our means of operating greatly improved, still I think there is to-day greater diversity of opinion on the subject than any other in dental practice. Shall we attempt to preserve capping one that has ached severely, or at all? When shall we extirpate? What are the conditions necessary to successful capping? Should we stimulate, expecting to produce a deposit over the exposed portion? Shall we consider a secondary covering evidence of a physiological or a pathological condition? Are climatic conditions of importance in explaining reported successes, or are we to attribute them to the superior skill and judgment of the operator?

I hope the next quarter-century will determine the principles of practice in this direction.

KENTUCKY STATE DENTAL ASSOCIATION.

(*Continued from page 382*).

Dr. W. P. McQuown, of Georgetown, Ky., then read a paper on the

USE AND EFFECTS OF COCAINE,

of which the following is an abstract:

The application of cocaine with a brush or cotton to the gums is ineffective, because it is not possible by this means to secure the absorption of a sufficient quantity to gain any anæsthetic effect. It must be injected beneath the mucous membrane. Use five or six minims of a freshly prepared four per cent solution of the muriate. Powders containing two grains each can be kept on hand; one of these to ⅔ of a drachm of water gives the desired strength. Antiseptic precautions should be taken before inserting the point of the needle; permanganate of potash solution as a mouth-wash, and wiping the part to be punctured with a 1 in 1,000 solution of bichloride of mercury, is recommended.

Five minims may be injected on each side of the tooth to be extracted. The point of the needle should be passed up easily, entering midway between the neck of the tooth and the apex of the root, and passing up near the bone, about one-half of an inch. If properly introduced, the solution will readily pass into the tissues. In case of the extraction of roots, half the quantity will be sufficient. Anæsthesia is immediate, though in ten minutes it is more complete. In a majority of cases there is no further pain than that caused by the introduction of the needle. In acute periosteal inflammation, caused from death of the pulp or other causes, cocaine and antipyrene have been used with favorable results. Inject at first five or ten minims of a five per cent solution of cocaine, and five or ten minutes later ten grains of antipyrene, dissolved in warm water. Give ten grains of antipyrene internally in an hour. Relief generally follows. If not, two hours later administer another dose of antipyrene. Swelling sometimes remains, but is not painful. As an obtundent of sensitive dentine, cocaine is effective, when used as recommended by Dr. Herbst.

The toxic effect of cocaine are nausea, numbness and cramping of the limbs, dryness of mouth and throat, and a desire to continually expectorate and protrude the tongue, difficult deep breathing, livid countenance, irregular pulse, a nervous, convulsive state.

Antidotes: Whisky, administered freely, inhalation of ammonia. If relief does not follow within ten minutes, place the patient in an incumbent position. Inject twenty-five minims whisky and sulphuric ether, equal parts. Inhalation of two or three drops of nitrate of amyl, repeated if necessary within ten or fifteen minutes. Extract immediately after the effect takes place. It is a good antidote for hysterical patients. Hysterical persons, or very nervous ones, who have great fear, complain of unpleasant effect. This occurs about once in ten cases.

* * * Dr. McQuown then cited a number of cases in which ten minims of a four per cent solution was injected, in which the toxic effects were marked, but, under the administration of antidotes, disappeared without any unfavorable results.

NEBRASKA STATE DENTAL SOCIETY.

(Reported for the DENTAL REVIEW, by C. N. Johnson, L. D. S., D. D. S.)

(*Continued from page 380.*)

Dr. C. N. Johnson, of Chicago, read a paper on "Dental Societies." (See page 405.)

DISCUSSION.

Dr. King, Lincoln—I have no criticism to make. The paper is prolific in sentiment and in every good quality. I indorse every word of it. What more can I say?

Dr. Roseman—I could not help thinking of myself while the paper was being read. I was at one time a sort of hermit, and during that time I made no progress. The moment I began attending societies I began to advance. I never saw the time I could not learn something from a brother dentist.

I wish also to say that the Nebraska Society has always been run for the best interests of the profession.

(TO BE CONTINUED.)

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.
PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M.D., D.D.S.,

ASSOCIATE EDITORS:

J. W. WASSALL, M.D., D.D.S. — J. G. REID, D.D.S.
LOUIS OTTOFY, D.D.S. — L. L. DAVIS, D.D.S.

INTERNATIONAL DENTAL CONGRESS.

After long waiting, our neighbor, the *International Dental Journal,* has pledged its support to the approaching Dental Congress at Paris. This is significant of its interest in the gathering, considering the fact that the *Journal* was not issued until about the beginning of the last week in June. As the Congress will assemble September 1st, its readers will doubtless have ample time to send in the titles of papers to be read before this convocation of the dentists of the world. Aside from the tardy appearance of this proffered support, the *Journal* is very much worried over the prospect of there being any future congresses held of a similar character. The idea seems to be uppermost in the mind of the editor that a future congress will be a stab at the dental section of the International Medical Congress. This is absurd and unreasonable. Those dentists who are desirous of the establishment of international dental congresses have no animosity toward the dental section of the Medical Congress. They are among the heartiest supporters of this section, and will labor in the future, as in the past, for the success of the dental section. It will be incumbent on the members present at Paris to decide whether it is wise or judicious to hold another International Dental Congress. In 1892 the United States will hold a world's exposition, to commemorate the 400th anniversary of the discovery of America. In view of this fact, which is perfectly well known, would there be any impropriety—is there any impropriety?—in suggesting that an International Dental Congress be held in the United States during that year?

The question of medical recognition of dentistry by "American dentists (who) have struggled too long to obtain medical recognition to submit now to be thwarted, in order to please the ideas (sic) of a very small portion in America," has nothing to do with the holding of future congresses. What is medical recognition of dentistry, and in what way has it given position to dentists in America? The American Medical Association has established a section on oral and dental surgery, and, by resolution, dentists are admitted to membership on condition of their being members of a local medical society. How many dentists, not holding the medical degree or license, are members of medical societies in the United States at the present time? Will the editor of the *International Dental Journal* answer this question? He knows very well that not one per cent of the dentists of the United States have availed themselves of this privilege. Thousands of them are not possessed of the D. D. S. qualification to enable them to become members of local medical societies; and, in face of this, we are told that *dentistry* has been recognized. The editor need not distress himself about this question. We are with him in advocating a higher standard of dental education in America and elsewhere, but we would venture to state that there is but one country in the world (Austro-Hungary) where a dentist is required by law to hold the medical license. A dentist cannot sign a death certificate anywhere, in any clime, nor can he practice medicine in any country (save the one above mentioned), holding the D. D. S., L. D. S, M. D. S. or D. M. D. degree. This is a fact pretty well-known, and pretty effectually disposes of the cherished idea that dentists are medical specialists from the legal standpoint. It is a source of much pleasure to us to mingle with medical men, and attend their meetings, local, national and international; but the truth is we are only partially doctors from the legal standpoint.

The DENTAL REVIEW has no "pet plan" of calling a return congress except in good faith, and it honestly desires to interest dentists, the world over, in favor of becoming broader in their views and practice; and it believes that future dental congresses will be of incalculable advantage to dentists and the public at large, as such congresses will tend to cement them together in the one grand object of perfecting the partly educational methods that now prevail.

The thought expressed by the editor, that dentists in America will hesitate about going to Paris, in consequence of the probability that there may be a future congress, is hardly tenable, as, if the fear were so great concerning a future congress, they might flock to Paris in such numbers as effectually to smother the idea.

The ironical and undignified allusion to the Auditorium building of Chicago not being large enough to accommodate a future dental congress, we pass by with the remark, that the dentists of Chicago are sufficiently known for their hospitality and large-heartedness to prepare suitable accommodations by 1892 for their brethren who may choose to honor them by their presence, should it be decided to hold an International Dental Congress in the second city in America.

DOMESTIC CORRESPONDENCE.

CORRECTION.

To the Editor of the Dental Review:

DEAR SIR:—I am in receipt of a note from Dr. J. W. White taking me to task for my remarks made in the freedom of discussion on the report of the Committee on Dental Science and Literature. Dr. White thinks I have done his firm an injustice, and suggests that a paragraph under the head of correction would be in order.

My remarks in the discussion as they appear in print, I must admit are somewhat mixed, but on the whole they are in the main correct. There is one word however that is of doubtful meaning and might be wrongly interpreted. I refer to the word "duplicity." What I did say or intended to say was, that the White Co. in the instance referred to acted in a double capacity, that of a middleman between the compiler of text books and the profession at large. If the compilers of text books cannot consult their professional brethren in regard to useful intruments or devices that have become the property of a manufacturing company by purchase, and that in all probability have been greatly improved by the inventor after the purchase, and if the manufacturing company cannot see the improvement; is that any reason that the author of a text book should not inform himself when he is in possession of the inventor's name? I recognize the White Company as merchants who have a right to conduct their business to their own advantage, but if their business is so blended with text book makers that it is difficult to separate them, they have no cause to complain if they are criticised when the subject of Dental Science and Literature is up for discussion.

JOHN J. R. PATRICK.

DENTAL COLLEGE COMMENCEMENTS.

HARVARD UNIVERSITY—DENTAL DEPARTMENT.

At the commencement exercises of the Dental Department of Harvard University the degree of Doctor of Dental Medicine was conferred on the following named (17) gentlemen:

Frederick Anton Arnold.
Henry I. Borton.
Charles Poor Briggs, A. B., M. D.
William Frederick Gay.
Paul Grunwald.
Frank Irving Hammond.
Frederick Sylvanus Hopkins.
Daniel Albion Jones.
William Russell Jones.
William Lombardino.
Patrick William Moriarty.
William Curran O'Leary.
Arthur Henry Osgood, A. B.
Caleb Heath Shepard.
Frederick Irwin Twitchell.
Eugene Jacob Wetzel.
Jacob Robert White.

CENTRAL UNIVERSITY OF KENTUCKY—DENTAL DEPARTMENT.

The commencement exercises of this institution were held in conjunction with the exercises of the medical department of the Central University, of Kentucky, at Macauley's theater, Louisville, Ky., on Tuesday evening, June 18, 1889. The dental valedictory was delivered by George E. Witherton, of Mississippi; the address was delivered by the Rev. L. H. Blanton, chancellor of the university, who also conferred the degree of Doctor of Dental Surgery on the following named (15) persons:

S. T. Butler, Kentucky.
Thomas Whitwell, Harris, N. C.
Valentine A. Hobson, Kentucky.
Archag Melcon, Turkey.
Charles Ross, Shacklette, Ky.
Albert Burnley Weaver, Jr., Kentucky.
T. B. von Beust, Indiana.
Peter Hendricks, California.
Irenaeus D. Hitchcock, Indian Ter.
N. B. Jenkins, Kentucky.
Charles Gray McGill, Maryland.
Frank T. Richards, Wisconsin.
Francis R. Stirly, Minnesota.
Frank E. Taft, New York.
George Etly Wetherton, Mississippi.

BOSTON DENTAL COLLEGE.

The twenty-second annual commencement exercises were held at Paine Memorial Hall, June 19, 1889.

The address was delivered by Rev. Edward H. Hall, D. D.; awarding of prizes by Dean J. A. Follett; conferring of degrees by President of the college, I. J. Wetherbee, D. D. S.; valedictory by Henry H. Piper, D. D. S.

The degree of Doctor of Dental Surgery was conferred on the following named (23) persons:

George S. Bates, Newtonville.
Lewis S. Breed, Pittsfield, Vt.
Leonard E. Brewster, Newport, Vt.
Marcus F. Brooks, Portland, Me.
Melville B. Buckley, Danvers.
Joseph M. Bulger, South Boston.
Harry H. Colony, Keene, N. H.
Melvin E. Davenport, Beverly.
Irving P. Eddy, Providence, R. I.
George M. Gillander, Harrison, Me.
John B. Gillon, Taunton.
William P. Houston, Thornton, N. H.
Walter S. Kenyon, Centerville, R. I.
Forrest H. Lynde, Billerica.
Joseph D. Maher, Portland, N. B.
George H. Payne, Boston.
Henry H. Piper, Dublin, N. H.
Harry R. Roberts, Boston.
Fred L. Sprague, Hanover.
Frank E. Stedman, Boston.
Leon C. Tolman, Athol.
George A. White, Santa Barbara, Cal.
George T. Phillips, Rutland, Vt.

UNIVERSITY OF MICHIGAN—DENTAL DEPARTMENT.

The forty-fifty annual commencement exercises of the Dental Department of Michigan University were held on Thursday, June 27, 1889. The commencement oration was delivered by the Hon. J. L. M. Curry, LL.D. The degree of Doctor of Dental Surgery was conferred on the following named (34) persons:

Albert Edward Anderson, England.
Robert Burns Avery, Pennsylvania.
Harry Fielden Briggs, England.
Frank Seldon Buckley, A. B., Mich.
Charles Sumner Buttolph, Michigan.
George Benton Chester, Indiana.
George Edward Courtney, Michigan.
Harry Goodrich Dunaven, Michigan.
Louis Phillips Hall, Michigan.
Frank Douglass Harding, New York.
George Byron Hayes, A. B., N. Y.
Clarence Eugene Henderson, Mich.
William Carley Herbert, Michigan.
George Arthur Holliday, Michigan.
Horace Nathaniel Holmes, California.
Edy Randall Johnson, Ohio.
Jacob William Jungman, Ohio.
Oscar Calm Kerlin, Ohio.
Reuben John Kirk, Ohio.
Charles Shuter McIndoe, Wisconsin.
Edward Cook Mills, Ohio.
Frank E. Morey, Michigan.
Charles Franklin Noyes, Michigan.
Arthur Mowry Potter, Michigan.
John Scott Rice, M.D., D.D.S., Ind.
Arthur Richardson, Canada.
Sumner Oliver Sawyer, Ohio.
Henry Herman Schuhmann, Illinois.
DeWitt Spalsbury, Michigan.
Carroll Wesley Staples, Vermont.
Griffith Pritchard Terry, Italy.
Frank Prescott Watson, Mass.
Joe Welch, Michigan.
John H. Williams, Ohio.

MEMORANDA.

Dr. F. M. Harris, of New Albany, Ind., is in Europe.

Dr. S. B. Brown, of Fort Wayne, Ind., visited Chicago recently.

The New Jersey Dental Society will meet July 17th, at Asbury Park.

Kentucky has between 400 and 500 dentists practicing within its borders.

Dr. G. W. Sparrock, of Point a Pitre, Gaudaloupe, W. I., has removed to Lille, France.

The friends of Dr. M. M. Levett will find him located at No. 10 Boulevard des Italiens, Paris.

About one hundred members were in attendance at the late meeting of the Indiana State Dental Association.

About forty dentists were in attendance at the recent meeting of the Kentucky State Dental Association at Louisville, Ky.

"Better late than never." "A half a loaf is better than no loaf at all." *The International Dental Journal* is "with us" from June 24, 1889.

Over twenty new members were added to the roll of membership of the Indiana State Dental Association at its meeting last month.

Drs. J. Taft and Mrs. McNaughton were selected to represent the Michigan State Dental Association at the International Dental Congress in Paris.

The Kentucky State Dental Association has adopted resolutions pledging moral and financial support to the Dental Protective Association.

A piece of bridge work made by Dr. Day in 1859, and worn for nine years, was exhibited at the late meeting of the Michigan State Dental Association.

One hundred and twenty-two members have been elected during the life of the Kentucky State Dental Association, and their names placed on its roll.

Patron—This set of teeth you made for me is too big. Dentist—Yes, sir. Sit down in the chair and I will enlarge your mouth a little.—*New York Tribune.*

The Kentucky State Board of Dental Examiners consists of Drs. A. O. Rawls, Lexington; W. Van Antwerp, Mt. Sterling, and C. V. Rosser, Elizabethtown.

Of 212 dentists practicing in the State of Kentucky, and who have registered their names with the Kentucky State Board of Dental Examiners, eighty-three are graduates of dental colleges.

The Kentucky State Dental Association has appropriated fifty dollars to the fund being collected by the Illinois State Dental Society to defray the expenses of examining the prehistoric skulls in this country.

Dr. F. Peabody, of Louisville, Ky., says: "The Illinois State Dental Society embraces within its membership a larger number of the most active, energetic and generous dentists of any society in the United States, without exception."

The members of the Kentucky State Dental Association will stand by their guns when it comes to defending themselves against the International Tooth Crown Company. Most of them have become members of the Dental Protective Association.

There is no "notion of continuing the *French* Congress, as a separate International Dental Congress;" there is no *French* Congress this year; if any time in the future there should be another Congress, it will be simply an *International Dental Congress.*

Dr. A. O. Rawls and J. F. Canine, were absent from the late meeting of the Kentucky State Dental Association, by reason of illness. Dr. Canine was injured in a fire, having burnt his arms and legs, and sprained his ankle in attempting to extinguish a blaze.

The American Dental Society of Europe will hold its annual sesssion at 8 Boulevard des Capucins, Paris, on August 6. Papers by Drs. Miller, Sachs, Bryan, Patton, Elliott, Chamberlain, Haskell and Fay; and clinics by Drs. Bonwill and Mitchell.

"We are heartily in favor of supporting the coming Dental Congress."

"We offer our support to the Congress."

"We pledge our hearty support to the French Congress."—Editorial in *International Dental Journal.*

The Kentucky State Dental Association intends to be earnest in enforcing the dental law of the State, and those who are not now on the register of the State board, and practicing in the State, will do well to address the secretary of the board, Dr. C. V. Rosser, Elizabethtown, Ky.

At the meeting of the annual convention of the American Dental Trade Association, held at New York, June 19th, $1000 was subscribed for the relief of the dentists who were impoverished by the Johnstown flood. A committee visited the scene of disaster to report on the losses and necessities of these sufferers. There were nine members of the profession located at Johnstown, one lost his life, others members of their family, and all have had their homes and business swept away.

It will be a long time before their practice can be resumed, and the present need for assistance is very great, so that this generous response on the part of the Association was a fitting and appropriate tribute to these suffering people.

The following were elected members of the Kentucky State Dental Association at the recent meeting held in Louisville, Ky.: J. H. Letcher, Danville; H. B. Canine, Louisville; L. W. German, Louisville; J. W. Clark, Louisville; R. H. Hodgen, Lebanon; and E. M. Redmond, of Louisville.

The Sixty-Second Annual Session of the Society of German Physicians and Naturalists will be held at Heidelberg, Germany, September 17 to 23, 1889. M. Middlekamp is Chairman, and M. Marcuse (No. 113^a Hauptstrasse, Heidelberg, Germany) is Secretary of the section on Dentistry.

The Kentucky State Dental Association has appointed the following delegates to the International Dental Congress, to be held at Paris, France, September 1, 1889: C. G. Edwards, G. S. Seymour, A. W. Smith, F. Peabody, C. V. Rosser, W. Van Antwerp, W. E. Baxter, A. O. Rawls, C. E. Dunn, W. P. McQuown.

The following were elected officers of the Indiana State Dental Association, at Indianapolis, for the year 1889-90: T. A. Goodwin, President; C. A. Budd, first Vice-President; A. J. Smith, second Vice-President; Merritt Wells, Treasurer; R. W. Van Valzah. Secretary. Lake Maxinkuckee was selected for the next place of meeting, on the last Tuesday of June, 1890.

The next meeting of the Michigan State Dental Association will be held at Jackson. This association is entering upon a new era of activity. Its constitution is to be altered, intrusting all routine business to an "Executive Council" after the example of the Illinois State Dental Society.

Dr. A. Robinson, of Grand Rapids, Michigan, gave a clinic at the Michigan State Dental Association of an insert filling of gold. Thin platinum is burnished to fit the cavity. It is removed and filled with melted gold and then cemented to place. It may be used to great advantage in extensive buccal cavities where it is difficult or impractible to apply the dam.

Dr. E. Andrieu, of Paris, France, is deceased. Dr. Andrieu had recently completed the most pretentious work on operative dentistry yet attempted by any French author. His untimely demise, so soon following that of Dr. E. Brasseur, leaves two gaps in the French professional arena that will not soon be filled. Dr. Andrieu was connected with the Institute Odontechnique, of Paris.

The nineteenth annual meeting of the Wisconsin State Dental Society, will be held at Severance's Hall, Milwaukee, Wis., July 16, 17 and 18, 1889. Papers will be read by Drs. Edgar Palmer, E. Saxe, F. H. Emmerling, G. H. McCausey, C. C Chittenden and Charles C. Southwell. Clinics have been promised by Drs. R. W. Lakin, R. F. Ludwig. G. A. Sinclair, E. B. Call, E. H. Allen, W. C. Wendel, A. J. Richter, Edgar Palmer, J. F. Sneathen, C. E. Edwards, Claude A. Southwell and Charles A. Southwell.

Dr. W. Van Antwerp, of Mt. Sterling, Ky., who served under Gen. Sherman during the war, and whose wounds received in battle have disabled his limbs, does all his work in a sitting position. He has devised an ingenious stool which enables him to assume any desirable position; his operating case and tools are also so arranged that everything used by him is accessible without rising from his stool. Any dentist, who suffers from any physical disability compelling him to sit while operating, will be cheerfully furnished with useful information by Dr. Van Antwerp, if applied to.

AMERICAN DENTAL ASSOCIATION.

The twenty-ninth annual meeting of the American Dental Association will be held at Saratoga Springs, commencing at 10 o'clock A. M., Tuesday, August 6, 1889. Geo. H. Cushing, recording secretary.

THE DENTAL TRADE ASSOCIATION.

The following officers were elected: R. T. Morrison, Nashville, Tenn., president; J. M. Ney, Hartford, Conn., first vice-president; F. Kemp, St. Louis, second vice-president; J. R. B. Ransom, Toledo, O., treasurer; and Lee S. Smith, Pittsburgh, Penn., secretary. Saratoga was selected as the next place of meeting.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

ORANGE, N. J., June 15th, 1889.

The next meeting of the National Association of Dental Examiners will be held in Saratoga, N. Y., Tuesday, August 6th, 9:30 A. M., and at other times during the week, between the sessions of the American Dental Association. It is important to have every State Board represented.

FRED. A. LEVY, D. D. S., Secretary.

INTERNATIONAL DENTAL CONGRESS.

The Kentucky State Dental Association adopted the following resolution at its recent meeting in Louisville:

Resolved, that we heartily commend the holding of the International Dental Congress at Paris, France, in September next, and trust that the delegates to the Congress will decide to hold their next meeting in the United States; the West would welcome the Congress of 1892 in a manner befitting so distinguished an assemblage.

THE JOHNSTOWN DISASTER.

The following is a list of the members of our profession who suffered by the terrible calamity at Johnstown, Pa.: Dr. *Geo. Wagner*, *drowned*, S. C. Poland, C. H. Hager, S. E. Peden, Jas. P. Thompson, W. E. Hannal, H. C. Hinchman, H. W. Fry, J. C. Duncan. Of these the last four lost everything they had in the world, the other four nearly all they possessed. Efforts are being made to raise a fund to assist these sufferers. A circular has been issued by W. F. Fundenburg, J. G. Templeton, H. W. Arthur, J. S. Goshorn, and Lee S. Smith, Treasurer, of Pittsburgh, Pa. Contributions may be sent as above.

THE MICHIGAN STATE DENTAL ASSOCIATION.

The following officers were elected for the ensuing year: President, Calvin S. Case, Jackson, Michigan; 1st Vice-President, C. H. Dyer, Grand Rapids, Michigan; 2d Vice-President, C. W. McNaughton, Grand Rapids, Michigan; Secretary, William Cleland, Detroit, Michigan; Treasurer, H. K. Lathrop, Jr., Detroit, Michigan; Superintendent of Clinics, E. C. Moore, Detroit, Michigan; Executive Committee, F. L. Owen, Grand Rapids, 3 years; H. C. Corns, Detroit, 2 years; G. H. Mosher, Jackson, 1 year.

THE PRESENT ASPECT OF THE IODOFORM QUESTION.— * * * Investigation has proved that disease germs are aided in their septic work by certain chemical substances called ptomaines, which are formed in the tissues as a result of their action upon the tissues. Iodoform, while it does not destroy nor seriously hinder the germs, does destroy the ptomaines. Thus, we may suppose, the tissues, not being enfeebled by the action of the ptomaines, are enabled either to destroy the germs or to resist their malign assaults. * * * In dressing wounds, the surgeon must hereafter use two different sets of antiseptics. He must first seek, as far as possible, to exclude disease germs, or render them inactive, and for this purpose he must use germicides, such as corrosive sublimate. He must next endeavor, by applying agents like iodoform, to prevent the formation of poisonous chemical substances in the wound, or to decompose them and render them inactive if once they have been formed. These latter agents, if they, like iodoform, contain disease germs, must be disinfected before they are applied. Iodoform should be washed in corrosive sublimate solution—*The Medical Record.*

NOTICE.

An abundance of interesting matter compels us to omit publishing in this issue some valuable practical letters received from some of our correspondents, as well as editorials, memoranda, etc., which are now in type.

OBITUARY.

Dr. F. H. Rehwinkel.

The subject of this notice was born at Celle, Hanover, June 15, 1825, and died June 8, 1889, of paralysis, at Chillicothe, Ohio.

He commenced his medical education in his native city, and completed it at one of the German universities.

Came to this country in the year 1849, practiced medicine in Natchez, Tenn., and afterwards was associated with Dr. J. H. Pulte, of Cincinnati, in the practice of homœopathy. In the spring of 1850 opened an office in Chillicothe. Was married on the 25th of November, 1851. Went to Portsmouth, Ohio, and for the space of a year practiced medicine in that city in partnership with Dr. George St. Clair Hussey. Returned to Chillicothe, and about the year 1853, turned his attention to dentistry; the state of his health compelling him to give up the fatiguing and irregular mode of life belonging to a physician. He was graduated from the Baltimore College of Dental Surgery, session of 1855; since which time he has practiced his profession with the exception of one or two years' service in the Union army in 1861–2. He became a member of the American Dental Association in 1874, was its president in 1877. He was also a member of the American Medical Association, and at the time of his death president of the section on Dental and Oral Surgery. In 1887 he was one of the American secretaries of the section on Dental and Oral Surgery of the Ninth International Medical Congress, which met in Washington that year.

Dr. Rehwinkel was an honored member of the dental profession, and his death will be sincerely mourned by all who desire the advancement of the profession.

THE

DENTAL REVIEW.

VOL. III. CHICAGO, AUGUST 15, 1889. No. 8.

ORIGINAL COMMUNICATIONS.

THE CARE OF THE TEETH DURING ACUTE DISEASES.*

BY J. W. WASSALL, M. D., D. D. S., Chicago.

The primary object of this paper is to consider the modifying influences to which the teeth are subject during a siege of illness, and to speak of the means that may be employed to avert a damaging effect.

Secondarily, the purpose of this paper will be to draw attention to a much needed reform in the care of the sick, by enlisting this and other societies in the work of endeavoring to secure better protection to the human teeth at a time of their great peril.

It is frequently observed and commented on both by the profession and the laity that the teeth are impaired as a result of an acute attack of disease. This is especially true of fevers. The extent of the injury varies according to the severity and duration of the attack, and the susceptibility of the teeth to malign influences.

Generally speaking, the greatest harm occurs as a result of the diseases seated in or involving the alimentary tract. Parenthetically it may be remarked that the alimentary tract suffers some derangement in almost all acute diseases; its functions being directly or symptomatically modified, no matter what the ailment.

The *causes* of injury to the teeth during an acute illness we will classify as *predisposing* and *active*. Under the head of *predisposing* causes we will enumerate :

(*a.*) Lowering of vital-tone in the teeth.
(*b.*) Presence of abnormal secretions.

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* Read before The Odontological Society of Chicago, April 16, 1889.

(*c.*) Want of care.

(*d.*) Want of use.

Under the head of *active* causes we will place:

(*a.*) The almost uninterrupted action of micro-organisms.

(*b.*) The solvent action of morbid secretions.

(*c.*) The corrosive action of medicines administered by the mouth.

An injurious influence, difficult of classification in either of the above lists, is a sympathetic effect upon the teeth which accompanies the exanthemeta or eruptive diseases. Let me define this statement more clearly. It is known that during the progress of diseases which have their manifestation in either the external integument, or internal mucous lining, or both, that the hair, nails and other dermal appendages are profoundly affected. The hair, for instance, will change color or fall out; the finger nails become very brittle. Is it not reasonable, therefore, to conclude that the teeth may—nay do—suffer deterioration as a direct result of functional aberation in the tissue from which they are derived and from which they continue to receive sustenance? It is common experience to note enamel markings produced by eruptive diseases, supervening during the formative stage of the uncalcified tooth-germ. If the tooth-germs are so easily influenced during the progress of exanthemeta, why should not the fully formed and erupted tooth, maintaining its intimate relations to the dermal layer, be subject to similar forces later in life?

Let us now turn to a consideration of the classified causes.

The first *predisposing* cause named was (*a*) "A lowering of vital tone in the teeth," as a result of systemic depression.

To acknowledge this as a cause commits us to the acceptance of the theory, disputed by some authorities, viz.: that dentine and enamel in teeth with living pulps are nourished through the circulation. Both the microscopical anatomy and the perceptible structural changes which these tissues undergo at different stages in the life of an individual, are abundant proofs that calcified tooth substance is normally and habitually nourished, and likewise subject to denutrition. Therefore, if this relation exists between the general circulation and the teeth, any disease lowering the general health diminishes the qualitly and degrades the nutritious quality of the blood for their supply, lessening their power of resistance to the destructive agents known to be present in the mouth. Moreover, this weakening of the vital force ordinarily resident in the teeth occurs at a time when destructive agents are increased in number and virulence.

The second *predisposing* cause given in the classification is (*b*) "The presence of abnormal secretions." It is difficult to determine the amount and nature of the harm resulting from this cause. Deleterious secretions may come from several sources, viz.: the oral cavity and the glands emptying into it; the alimentary canal beyond the mouth, and the respiratory passages. It is entirely within the range of possibility that a combination of secretions or discharges from the oral mucous membrane, the mucous glands, the salivary glands; and by emesis, regurgitation or eructation from the digestive tract; and by coughing, expectoration and exhalation from the air passages at a time when these organs and parts are functionally deranged, might furnish a "medium" favorable to the growth of micro-organisms which attack tooth substance.

The third *predisposing* cause to be considered, and the most important point of this paper is (*c*) "Want of care." Is it not the lamentable truth that during an acute illness, especially if the patient (which is so frequently the case) has grown indifferent to bodily comfort, the teeth are forgotten and neglected? The examination of mouths of persons who have recently recovered from illness has no doubt many times called forth from each of you a hearty condemnation of the ignorance of attendants in the sick-room, regarding the hygienic needs of the teeth. Except in a few cases, where the patient requests it or the good sense of an intelligent nurse directs it, almost no attention is paid to the systematic cleansing of the teeth. An antiseptic or disinfectant wash for the mouth as a preventive of caries of the teeth is almost unknown to the sick room.

These conclusions have been reached after conversation with physicians and trained nurses and consultation of text books used in training schools for nurses,* all of which only served to emphasize the correctness of my position.

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* Clara S. Weeks' Text Book of Nursing, the acknowledged standard work, has to say on this topic only the following; "The mouth should be often washed and the teeth brushed or wiped off with a bit of soft cloth. Water containing a few drops of tincture of myrrh, or of Condy's fluid, is good to rinse out the mouth. To remove sordes from the teeth, a mixture of lemon juice, glycerine and ice-water in equal parts will be found efficacious."

(*d*) "Want of use" was given as the last *predisposing* cause. The change of diet to soups and gruels deprives the teeth of the friction of mastication, a function highly essential to their well-being at any time. The evil of this enforced idleness may be counteracted, to some extent, by the more energetic employment of cleansing measures.

This completes the consideration of the *predisposing* causes. Let me now draw your attention to the *active* causes. The first one enumerated is (*a*) "The uninterupted action of micro-organisms." The mouth, undisturbed by mastication or the tooth-brush, with generally an elevated temperature, presents a most favorable situation or "medium" for the development and growth of caries producing fungi, as well as thousands of other varieties of vegetable growths of whose nature and activities mycologists as yet know little. This state of the mouth promotes decomposition in the food-matter and sordes which neglect and quiet have combined to accumulate about the teeth, gums and tongue. Dr. G. V. Black's investigations have shown that a class of gelatin-forming bacilli —*gelatogens*—flourish in the mouth. If allowed to grow undisturbed they rapidly form a gelatinous deposit at the gingival margins which will extend over the crowns of the teeth. This Dr. Black informs us is the gummy deposit so often seen at the necks of the teeth, and under which disintegration of the enamel is so liable to occur if allowed to remain for any length of time. Within this gelatine, and protected by it the *streptococci media*—the fungus of dental caries—thrives. Enveloped in the protecting product of the gelatogen, the streptococci pass through their life processes in the course of which lactic acid is excreted which dissolves out the lime salts of the tooth. It is mainly by the coöperation of these two species of fungi—gelatogens and streptococci media—that the extensive devastation so often observed in the mouth after a severe and protracted illness, is accomplished. The amount of discomfort and harm wrought by the myriads of other varieties of micro-organisms which infest the oral cavity during an acute disease is beyond my weak powers of description and computation.

Next in order of *active* causes given is (*b*) "The solvent action of morbid secretions." As early as 1796, Charles Hope, M. D., of Edinburgh, proved that an acid is secreted from the free edge of the gums in their morbid condition capable of decomposing the hard structure of the teeth. However, concerning the agency of a general acidity of the fluids of the mouth in the production of caries the evidence that it is an active cause is of a doubtful character.

It may be stated as a general principle that the solvent power of acid secretions upon the teeth is of limited extent, and acts by decalcifying the whole exposed surface of the tooth rather than in the formation of a circumscribed carious cavity. It is not unreasonable to suppose, however, that the persistent application of perverted fluid secreted from a gingival margin, or even the long-continued presence of discharge from a mucous patch or other oral lesion, might produce a cavity in a tooth.

The last *active* cause mentioned is (*c*) "The corrosive action of medicines." It is frequently remarked to the dentist that injury has been done the teeth by medicine taken during a severe illness. Of the falacy of this belief so prevalent among physicians as well as the public generally, patients it is needless to speak here. It is highly improbable that modern physic in its highest development directs the administration of drugs powerful enough to be chemically destructive to the hard tissues of the teeth. I am not ignorant of the fearful havoc played by mercury upon the teeth and alveolar processes of the pioneers in the malarial districts of America. Scores of cases have come under my personal observation where whole dentures have been wrecked by mercurial salivation, now fortunately an obsolete therapeutic measure.

Remedies: With the knowledge of the manner in which the various agents and forces operate to produce injury to the dental organs during an acute disease, it remains for us to set forth the measures which can be safely and successfully employed to prevent it. In the light of the facts above stated (and you all knew them before as well or better than I), it would seem that a remedy is found in a proposition which has been applied to the teeth in health, viz: *That if it were possible to obtain and maintain absolute cleanliness, caries could not occur.* The nearer this condition can be approximated the better the protection. Supplement efforts in this direction with the application of disinfectants and antiseptics.

The measures to be employed, then, to preserve the teeth from injury as far as possible, will be to see that the attendant in the sick room faithfully and systematically uses the best methods for cleansing the teeth, in connection with a corrective and antiseptic mouth-wash. The cleansing process should be repeated as often as possible without wearying or taxing the strength of the patient, in order to break up colonies of fungi which form and form again rapidly.

Disagreeable ingredients must be excluded from the dentifrice and wash, in order not to counteract the comfort which such attention to the mouth would otherwise give. It is frequently the case that the most distressing symptoms of a fever are felt in the mouth.

The following formulas have been furnished by Dr. Harlan for use in the sick-room, to be applied as directed by nurse or patient:

℞	Resorcin (crystals)	℥ ss
	Aqua cinnamomi	fl. ℥ viii

M. Sig. A tablespoonful in two ounces of water will prove effective as a mouth wash. The teeth and gums may be brushed with above in full strength.

℞	Acid carbolic (95 per cent)	℥ ss
	Thymol (crystals)	ʒ ij
	Glycerine	℥ iv
	Aqua cinnamomi	℥ viii

M. Sig. Dilute to suit and to be used as a mouth wash.

℞	Acid carbolic (crystals)	ʒ ij
	Oil Gaultheria	ʒ iv
	Oil Cassia	ʒ i
	Alcohol	℥ iv
	Aqua rosæ	℥ xii

M. Sig. Use as a mouth wash, or in full strength on the brush.

Dr. Black advocates the use of the juice of lemons or oranges, applied with the brush. It will prove comforting and efficacious.

In conclusion, we find from the study of the subject that the teeth are injured—

1st. From within—the nutrition of the tooth being interfered with, structural changes follow, which may persist as a permanent weakness of the organ, but which, at the time, render it more susceptible to the foes from without.

2d. From without—destructive agents producing a solution of continuity upon the exterior of the tooth, forming a *carious* or *eroded* lesion.

The harmful nature of the attack from within cannot be averted. The physician is presumably doing all that is possible for the general condition. The harmful nature of the attack from without—upon the exterior of the tooth—we believe can be diminished by the sanitary measures recommended.

Shall we join in an attempt to impress physicians with the great importance of requiring thorough care to be paid to cleansing the teeth in acute diseases? Shall we make efforts to induce training schools for nurses to add instruction in the care of the teeth to the curriculum?

A CRITICISM.

By CALVIN S. CASE, D. D. S., M. D., JACKSON, MICH.

(Continued from page 284.)

In a former article printed in THE DENTAL REVIEW for May, I endeavored to show the futility of an argument which was intended to prove the existence of nerve fibres in dentine and enamel, with no other evidence than the sensations of pain which result from cutting into a tooth.

The principal feature of the argument in question was a statement that is erroneous both in matter of fact and implication; *i. e.*, "nerve fibres, being the only transmitters of sensation, must reach to the point where contact produces pain." With no desire to ridicule a not uncommon error in the application of the word "sensation," it became necessary, in this instance, to clearly define its position, in order to separate it from that which it might be said to imply, or that which does actually or objectively occur. For, as I attempted to show, and shall endeavor to elaborate, the only foundation the argument possesses from a hypothetical standpoint must lie in the following statement; *i. e.:* "*Sensation* is located in the soft organized tissues in the dentinal tubules, *and is not mere transmission of vibrations to the pulp*"—a statement which I draw from the quotation from Dr. Tomes, and which was introduced into the paper to substantiate the views of the author, and one to which I shall refer further on.

I endeavored to point out the well-known fact, therefore, that sensation, feeling, perception, and the like, are psychical qualities of mind, having their location, so far as we know, only in the brain, and though at times concomitant with nerve impulses and vesicular explosions, are in no wise necessary factors, and, in consequence, irrelevant when used in this sense to prove the presence of things unseen, and whose action must always be confined within the limits of physical qualities of matter. Further, I attempted to show, briefly, that sensations can give us no conception of the real nature of cause, force-currents or media, and, therefore, from a subjective standpoint alone, no scientific or common sense right to assume a knowledge of qualities or conditions in an otherwise unknown field, or where phenomena cannot be observed and intelligibly compared. In other words, every attempt which we make to transcend the organically imposed limits of our intelligences must always result in evidence that is visionary and untrustworthy, rather than scientific and reliable.

Again, that the *a priori* form of all knowledge is sensation, or impressions of mind produced by some form of force-currents transmitted to a brain from external agencies, and, therefore, nearly, if not invariably, the initial condition of these currents is molecular motion in *nerveless media;* which, transferred to and propagated along a nerve fiber by the isomeric transformation of its molecules, finally initiates some complex action with chemical change in the vesicular nerve elements of the cephalic ganglion, with concomitant psychical phenomena. Even the peripheral nerve endings in tongue, lips and finger-tips are microscopically at no inconsiderable distance from the object; while those of the optic and auditory nerves—though often miles away—are immediately shielded and protected by relatively distant barriers and outlying media for first receiving, moulding and transmitting the incoming force-currents, in keeping with the special needs of their respective peripheral organs. In like manner there is no reason to suppose that fluids which we taste are absorbed by the mucous membrane of the tongue, and come in actual contact with the gustatory nerve endings; nor that floating particles which give us the sense of odor ever penetrate the encasements of the peripheral organs of the olfactory.

Thrusting an instrument into a normal tooth pulp will often produce little or no pain; and yet, were the same pulp approached by a different channel, intense suffering would result.

While primary channels of transmission, in outlying areas, beyond the peripheral endings of nerves, may not be the invariable requisites to force-currents which result in feeling or sensation, the examples I have here and elsewhere shown are sufficiently numerous, I think, to establish the claims of my argument; and further, to give undoubted force to a theory which I have never seen expressed, that peripheral end-organs (or nerve trunks) do not possess the property of receiving and transmitting intelligible—or ideal—force impulses by direct contact with the object, but require that all communications shall first pass through some outlying medium.

There are certain exceptions that may be considered of sufficient importance to destroy the theory I have here advanced. For instance, irritating an efferent nerve trunk will produce contraction of its muscles; yet the same action of the muscle will result from an electrical current applied directly. Severing an afferent nerve trunk will produce an unintelligible shock; irritating it may set in motion reflex impulses along efferent nerves, but always to muscles which tend to remove the disturbing influence from its peripheral endings.

This correlation of central and peripheral cell-elements certainly illustrates the *intention* of nature—if I may be allowed to use the expression—that all force-currents, whatsoever, shall enter the nervous system and become nerve-impulses through the peripheral organs, to which they are invariably referred; and also, that the central cell acts with mechanical automatism, independent of sensation or conscious brain force.

"If a patient paralyzed by some injury of the spinal cord that has left the lumbar enlargement intact, has his foot touched, the leg is quickly withdrawn; not only without a cerebral act, but even without his brain being in any way affected, unless indirectly, by the shaking of the bed. Thus the branched corpuscles and fibers contained at that point in the cord with which the afferent and efferent nerves of the leg are connected have at once the function of giving out, when the disturbance is communicated to them, the requisite quantity of molecular motion, and of so directing this to the respective muscles of the leg as to cause the appropriate movement." A decapitated frog can be made to perform muscular movements of such a complex nature, that would seem to be impossible to the uninformed, other than by the force of thought and will; but which can only be intelligently explained within the limits of molar-motion. In fact, every physiological action of the nervous system is but a correlation of physical forces, kept in motion by environing influences within and without the body, and of adjusting these complex movements in obedience to the complex stimuli.

In summing up the functions of the nervous system as thus formulated in terms of motion, it will be useful to observe the greater comprehensiveness of view we obtain by excluding the ordinary implications induced by the admixture of concomitant psychical action. Moreover—in the words of Herbert Spencer, to whom I am indebted for many thoughts herein contained—only in these terms can there be given an adequate definition of fully developed nervous functions. "If we admit any subjective element, our definition becomes inapplicable to all those nervous actions which have no subjective accompaniments—which go on without feeling; and a conception of nervous functions which excludes those of organic life cannot be a complete conception. On the other hand, the definition of nervous functions as consisting in the conveyance and multiplication of molecular motion holds in all cases. It includes equally the conduction of an impression made on a nerve of sense, and the excitement of chemical metamorphoses in a gland."

Before my side of the argument can be considered complete, it becomes necessary for me to endeavor to combat the views of no less a man than Dr. Tomes, who is freely quoted in the paper in question, and whose views—if I interpret them rightly—fully substantiate those of Dr. Ottolengui; and in my humble estimation are but another illustration of how easy it is for even great men to fall into the common error of mistaking subjective conceptions for objective phenomena.

That portion of the quotation which has direct reference to our subject is as follows: "There can be no question that the sensitiveness of dentine is due to the presence of soft organized tissues in the tubes, and is not mere transmission of vibrations to the pulp, through a fluid or other inert conductor. The peripheral sensitiveness of a tooth can be allayed by local applications, which it would be absurd to suppose were themselves conducted to the pulp; moreover, it is within the experience of every operator that, after the removal of a very sensitive layer of caries, you often come down upon dentine which, though nearer the pulp, is far less sensitive, a condition quite inexplicable except upon the supposition of different local condition of the contents of the tubes."

The proposition might be construed to mean that sensitiveness is due to some peculiar conducting property of the soft organized tissue, were it not that he intentionally destroys this idea by finishing the sentence with its denial. Let us make a literal translation of the second sentence, or argument: "Sensitiveness" (which in this place can only mean the consciousness of pain) cannot be caused by vibrations, or afferent force-currents to the pulp, for the reason that it would be absurd to suppose that the medicament itself reaches the pulp and obtunds or inhibits its power of sensing these vibrations; therefore relief must come, if at all, from the direct action of the obtunding agent upon the dentinal tissues, preventing *them* from feeling or painfully sensing the operation.

Can this be construed otherwise? If it was intended to recognize, in the slightest degree, a fact which I have endeavored to enforce, that no tissue of a tooth, however highly organized—even the pulp—has in itself the slightest sense of feeling, and therefore can be but a mere conductor of what we are pleased to call "molecular vibrations," "nerve impulses," etc.—but which in reality is some unknowable force that puts the brain in communication with the outer world—then would he have said that "sensitiveness in dentine is not due to the transmission of vibrations to the pulp, but to a highly organized tissue in the tubes"? and followed it with an argument that is more suggestive of his real meaning than the bare proposition itself?

I am unable to see the force of the argument unless, as I have said before, we are dealing with sensations as real entities, apart from a perceiving brain, instead of force-currents and objective realities, the nature of which we can never know from a subjective standpoint.

From the trend of scientific thought upon this subject, that I have endeavored to make plain, I think the idea will not be unreasonable to exclude from our minds, in the present status of microscopical research, the necessary presence of nerve fibrillæ, or nerve substance proper, in dentinal tubules, and realize the possibility that the soft gelatinous contents is endowed with a highly specialized property, similar to striated muscle fibre, of propagating wave currents of force, which are transformed into "nerve impulses" by the mechanico-vital relations sustained between the odontoblast cells and the peripheral end organs of the dental nerve; the same as voice waves are transformed into peculiar currents, or interrupted impulses of electricity, by the aid of the mechanico-electrical relations sustained between the sensitive diaphragm of the "transmitter" and one of the wires of a telephone system.

The atoms of this outlying dentinal medium, in a normal condition and under natural stimuli, would always be in a constant state of vibratory motion, and under the irritating influence of disease this motion would be greatly accelerated. In this state a sudden laceration from an excavator, or bur, would throw these perturbed atoms or molecules into violent oscillatory commotion, precipitating a storm of force-currents to the pulp and on to the brain, resulting in a sensation of pain, which would be referred to, or seem to have its location in the tooth.

Now let us suppose that we insert into the cavity of decay a "pain obtunder," or something that will render the atoms of this hypothetical medium inert, or by some treatment paralyze or destroy their inherent property and abnormally endowed power of irritating force-currents to the pulp, then would not Dr. Tomes' argument fall to the ground?—the whole seeming to rest upon the erroneous proposition that we are dealing with pain, and not exclusively with motion and force.

The often met with "different local conditions" referred to in the last part of the quotation, Dr. Ottolengui seems to think of much importance to his view (a criticism of which, space will not allow), and yet with a little thought it will be seen to be in perfect harmony with all I have said.

Let it be remembered that nothing travels along these channels of communication but force; probably in the form of vibratory waves or isomeric transposition of protoplasmic elements communicated from one molecule to the other, as a row of bricks, standing on end, are made to fall. The tubular contents of the dentine in a normal state is no less a conducting medium than when perturbed by disease; each molecule is stored with potential force, ready to be disengaged when properly disturbed by its neighbor; and yet, in order to be fully discharged, requires the disturbing influence to be of a peculiar quality; the same as the molecules of a conducting wire in a state of electrical tension requires a peculiar force to awaken them to activities that result in currents of transmission. At this place, and with this condition of the dentine, we obtain from *artificial* stimuli, far feebler sensory responses, because the tissues are not infested with disease, and that concomitant perturbation of its molecules (hyperæsthesia) in which reside greater powers for initiating wave impulses.

This is a simple, and I believe truthful, explanation of that which must always remain "inexplicable," so long as we are unable to eliminate in our reasoning psychical from simple physiological forces.

"Physiology is an objective science; and is limited to such data as can be reached by observations made on sensible objects. It cannot, therefore, properly appropriate subjective data; or data wholly inaccessible to external observations. Without questioning the truth of the assumed correlation between the changes which, physically considered, are disturbances of nerves, and those which psychically considered are feelings; it may be safely affirmed that Physiology, which is an interpretation of the physical processes that go on in organisms, in terms known to physical science, ceases to be Physiology when it imports into its interpretation a psychical factor—a factor which no physical research whatever can disclose, or identify, or get the remotest glimpse of." *

It is unfortunate that the words "sensitive" and "sensitiveness" are used with so liberal meaning. For instance we speak of a thing as "sensitive" that responds to a minimum amount of force. Thus balances are sensitive to weights, thermometers to heat, and photographic "dry plates" to light.

In a somewhat higher sense prominent authors speak of protoplasm as "sensitive," having reference to the specialized properties of its elements—more particularly to that of "irritability" and "automatism," which is exhibited in the amœba by such a perfect co-ordination of movements in response to environing agencies and individual needs, that it has often led to the error of enlarging the meaning which the word should be restricted to if used at all in this connection.

When we speak of "sensitiveness of dentine," however, we can have proper reference only to *sensation* and *perception* of pain, and not to the occurrence of physical activities independent of brain. In the one sense the word has reference to abstract relations among things, and in the other to the sentient perceptions of the mind. The one relating to physical changes in matter the other to the awakening of feeling, sensation, consciousness.

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* Herbert Spencer's "Principles of Psychology," p. 48.

If the brain is made unconscious as in general anæsthesia—everything else being normal—all the objective or inherent modes of motion among particles of protoplasm, and every physical response not immediately under the control of special sensory organs, will probably occur the same as during consciousness, but nothing which can be likened to sensation or pain. Whereas in perfect local anæsthesia the conditions are reversed. Here inordinate oscillatory motion in the local elements is prevented from taking place in response to the artificial stimuli or lesion of the part, either by some peculiar action of the medicament, or by cold and heat destroying perfect atomic equilibrium, or by warmth and certain applications removing the aqueous constituent of the tubes necessary to vibratory motion. Be this as it may, the elements have simply been forced from their power of initiating force currents and subsequent nerve impulses, and in consequence a sentient brain is made aware of the operation only through indirect channels.

Is it because nerves or nerve substance enter into cells that they, with proper environing conditions, perform certain amœboid movements and pseudepod prolongations? Is it not rather the inherent property of the combined elements which go to make up the cell, responding to the influences of vital and chemical force. And this so-called "vital force" is akin to the forces of nature everywhere, outside the body of things that possess life; as may be exemplified in the beautiful crystallization of elements whose inherent properties induce them to respond to the subtle influences of these unseen and unknowable currents.

THE PREPARATION AND FILLING OF ROOTS AT ONE SITTING.*

BY E. L. CLIFFORD, D. D. S., CHICAGO.

"'Tis more by art than force of numerous strokes
The dextrous woodman shapes the stubborn oaks."
—*Homer*.

During the transactions of our January meeting a member of the Business Committee approached me, and asked that I furnish a paper for your consideration, and kindly accorded me the privilege of selecting my own topic. You will probably remember that at this meeting the subject of filling root canals was presented to you and very fully discussed. This, combined with the fact that I had a few days previously noticed the following article in the December "Items of Interest," prompted my deciding upon the subject of "The Preparation and Filling of Roots at One Sitting."

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* Read before the Chicago Dental Society.

"The article referred to bears the caption, "I do not indorse immediate root filling," and reads as follows: "We can never know that incipient abscess is not present, and, if it is, trouble will always follow such an operation. It is to be deplored that this practice is advocated to such an extent in our periodical literature, on account of the danger of leading young men astray. We should be more conservative in our practice. A root may be filled immediately if we have destroyed and removed the pulp ourselves, but, even in those cases, I would prefer to leave it a day or two, to destroy any living tissue that might remain in the canal. For this purpose I know of nothing better than carbolic acid .95 per cent."

The above article bears the signature of an honored member of our profession; one whom you and I respect and appreciate as an authority upon dental subjects; one whose unpretentious and unobtrusive method of imparting to his fellow-practitioners whatever of interest has dawned upon his prolific mind has more than once awakened our commendation. His professional standing, I feel, warrants the liberty I have taken, and the prominence here given to his thought; and it is to provoke a generous and a just discussion, distinguished for ample deference, that I present this subject.

The reason given for the position taken in the above paragraph, and the only reason, is, "We never know that incipient abscess is not present." Well, suppose it is present? What is an "*incipient*" abscess? In medical lexicology I have hunted in vain for an interpretation. The term incipient, I know, is used with freedom by medical writers, and will therefore exonerate the authority quoted from any intention to launch a new word upon our already crowded sea; but as the term has not been thought of sufficient importance to find a place in our special lexicons, I take it for granted that it is used simply in its original and literal meaning. Therefore the term incipient abscess must mean an abscess just beginning, for the word is defined, "beginning, commencing, starting." Now, what has pathology taught us is the beginning of all abscesses? Is it not inflammation? And must not inflammation be preceded by, first irritation, then contraction and dilatation of the vascular surroundings, followed by hyperæmia and more or less complete blood stasis, to be in turn followed by the various steps consequent upon any inflammation; and let us not forget, at this point, that inflammation does not *necessarily* lead downward through the grade of retrograde metamorphosis to finally reach suppuration, atrophy, gangrene; or death. But remember that life is tenacious; that physiological tendencies, with equal fortune, will invariably overcome and overbalance pathological drift, the inclination of all tissues to return to the normal health status being so great. No. "Inflammation ceases to advance just so soon as the irritation is removed, and the blood, circulating through the vessels, restores their walls to a healthy state. When this happens, *recovery* at once begins. The injury to the vessel-walls being slight, and the exudation trifling, the vessels soon begin to perform their normal functions, and what is effused undergoes reabsorption by the lymphatics, or by the blood vessels themselves."

Now, then, this fact established, should the presence of an incipient abscess debar us from finishing our operation, *if* it has been possible to thoroughly clean and sterilize every portion of the pulp canal and dentinal tubuli, and can successfully reach with our filling material the apical foramen. I think not. The position I take in regard to devitalized teeth is, that there is but *one* object to be accomplished in their preservation; that is to *clean* the roots; and this I believe can, in a majority of cases, be done (I will not say as well, but better), at one sitting than twenty. In using the word clean, I, of course, use it in its most superlative sense, no half way, or "that is well enough," should ever satisfy the honest operator.

If, then, our sole object is to clean the root, it signifies that the root contains something that is unclean and impure. The question then arises, if this unclean and impure matter is contained in the root, in what portion of the root does it find a habitat and a lodgment? Is it in the pulp canal, and the pulp canal *only?* If so, 'twould be an easy matter to purify and clean all roots presenting, at one sitting. But are we not stubbornly met with the fact that the boundary line of this unclean substance, and its effects, reaches farther than the above suggestion, and therefore that our remedies must penetrate farther to be effectual.

Another question would here naturally arise: Can we follow it, and if so, how? Another digression forces itself upon me at this point, but only for a moment, as I will accept it without comment;

that is, to accept the germ theory as an etiological factor in the pathological condition to be overcome. I take it for granted that micro-organisms are accepted as prime movers in all pyogenetic affections, at least until some other theory more plausible is advanced; and from this bulwark will fire the random shots destined for the field of inquiry upon the ground of progressive surgery. Fermentation and putrefaction having advanced sufficiently, the habitat or lodgment of the micro-organisms has, of course, become too small; their products have generated and produced sufficient gaseous substance to more than fill the cavity of the pulp chamber and canal; consequently a hunt for other quarters is their ultimatum. The nearest and most direct outlet we believe they will take, and our minds are at once directed to the dentinal tubuli and apical foramen. The tubuli, having been occupied by animal matter, must certainly come in for their share of fermentation and putrefaction and their results, and must so harbor nests of micro-organisms that might revolt at any moment, declare an insurrection, and proceed to wage a merciless war upon the surrounding tissues. For this reason, it will readily be seen that it is not enough to clean and sterilize the root canal proper, but these tubuli must also be emptied, cleaned, dried, sterilized and filled.

As to how this shall be done: My first thought in the procedure of such an operation is, *thorough dryness and complete* protection from any future inundation of saliva, water, or other septic fluid. To gain this, the rubber dam is brought into play, safely adjusted, and the cavity of decay and pulp chamber relieved of its detritus. Having removed all possible with spoon excavators, and dried as much as possible with bits of spunk, I then saturate the chamber with a *non*-escharotic disinfectant, waiting a few moments, again dry the cavity, and proceed to remove any particles of putrescent pulp within the canal. Should pus already have formed, I use alternately injections of peroxide of hydrogen and an etherial solution of iodoform, believing that, with these agents, I simplify and render easy what would otherwise be tedious and difficult. I do not know that I have seen a reason given for this alternating of $H_2 O_2$ with iodoform and ether, but, believing that, to be scientific, we should have an end to accomplish in each step taken to re-establish a physiological function, or to eradicate a pathological condition, I will try to give you my reasons for each step taken.

First, then, we court perfect dryness. Why? Because moisture, warmth and microbes are the three essentials to septic fermentation. Absence of any *one* of these is sufficient to prevent decomposition.

Second, protection from saliva. Why? First, because it is a liquid, and its presence would thwart our efforts at dryness; next, our scientific researches have shown us that saliva contains and propagates, not only all classes of bacteria now known to us, but most of the fungi as well. Not only benign micro-organisms find a flourishing element in saliva, but most of the pathogenetic species also. In fact, nearly fifty separate and distinct foreign and malignant substances have been extracted from the human saliva, ranging from a simple mucous corpuscle to pus corpuscles and all the malign bacilli known to exist within the animal economy. Thinkest then you have sufficient reason to protect from saliva?

Third. Why disinfect the cavity of decay? That you may not push into your pulp chamber, and from thence into and through your root canals, the septic matter you know to exist in that habitat; also on the principle of "an ounce of prevention being worth a pound of cure."

So far we have had a comparatively easy task. We have had only that portion of our root to deal with that we could see or feel. If, however, putrescence has taken place, disintegration has, of course, been established, and it will be impossible to remove the pulp entire, and the process of removing it mechanically is too long and tedious (especially if the case in hand has more than one root). What, then, shall be done? It is my practice, after removing all possible in the manner described above, to saturate the chamber and canal with the vol. ex. eucalypti (made by Sander & Sons, of Australia; I never use any other), and then drying with spunk, to apply chloroform to saturation. My object in doing this is two fold: First, for its analgesic effect; but mostly as a solvent for the oils and fats left adherent to the walls of the canal, and occupying the spaces of the tubuli.

(Although not pertinent to the subject in hand, I will state that if I were not going to fill at one sitting, and wished to accomplish the same end by prolonged treatment to two or more sittings, I should fill the pulp chamber and canals with Squibbs' carbonate of soda, and leave it for three days. I would thereby saponify these oils, fats and extraneous matter with this alkali, and, at the end of the time named, a little warm water would be all required to wash out and clean the root.)

The fatty substance being disposed of, in what condition do we find our organ? Tolerably clean, but we have been compelled to use liquids; therefore we still possess one of the main elements necessary to the growth and propagation of pathogenetic material; *i. e.*, moisture. We insert our cotton, bibulous paper, spunk, and all the other absorbents at our command, but still our work is defective; it is not complete; we have not been thorough, and there is only one element in nature known to me that can be called to our assistance. That element is heat; and although the statement has been made that heat as an antiseptic was useless to the dentist, from the fact that some scientist had discovered that 212° F., and that maintained for 1½ hours, was necessary to destroy microbes without spores, and that the heat must be increased to 284° F. and maintained from 1½ to 3 hours to destroy the spores. I am satisfied in my own mind, and will endeavor to show, that we do not use heat for its direct antiseptic effect; but it is one of our best assistants toward that end. The statement has also been made, that the perfect drying of a root by heat (such, of course, as can be used in the mouth) will not destroy germs or spores. To all this I bow in humble acquiescence. But, acknowledging the fact, is there no other assistance that heat can render us in accomplishing this end? I think so. After drying as well as possible with our absorbents, if we can contrive some method or appliance by which we can carry heat much greater than the normal surroundings of the root into the canal, we certainly can extract from its hiding place all the moisture possible. We certainly know it is a law of physics that no two substances can occupy the same space at the same time. We also know that a superheated instrument, coming in contact with water, will convert it into steam, which is gaseous, and cannot be confined, but must escape; vacuum must be the result. We also know that nature abhors a vacuum, and that these osseous structures, having been deprived of their natural quota of water will seek for and find, if possible, its requisite. Taking advantage of this physical law, we supply the new moisture, first charging that moisture with some element known to be antagonistic to growth and development of pathogenetic elements. We find this dry, desiccated tooth waiting with impatience to drink or suck up the first molecule of water presenting, and in order to carry out the idea first established, and to kill as many birds with one stone as possible, the moisture I select is the ethereal solution of iodoform. The liquid penetrates into all the anfractuosities and diverticula of the bone or abscess; the ether becomes absorbed or evaporated, and the agent is deposited uniformly on the pyogenic membrane, the action of which it modifies, dissolves any oils or fats which may have been left in the tubuli, and leaves the spaces filled with the medicament used. Now, having the root thoroughly saturated with iodine, I promote further evaporation by warmed air, and take a further advantage of our physical law of suction, and compel the dentine to attract my chloro-percha solution or oxychloride of zinc, which ever material I am using. Of course the less dentine we have in the roots the less disinfecting we are called upon to accomplish; and, if the strength of the organ will permit it, and your sense of touch is sufficiently skilled, I would admit the theory of Dr. Allport, and advise the removal of as much dentine as possible. I should advance, however, in the practice of this theory with a grain of caution.

We have our root now, if we have done our work thoroughly, cleaned and relieved of its pathogenic substance, and we have replaced this substance with a clean, artificial, non-porous, indestructible, impermeable, antiseptic, non-corrosive substitute. Now, if we can do what I have stated above, can we do more by prolonged endeavor? And I will only ask to be credited in the statement that daily experience is justifying the course, so far as I am able to judge; and, without wishing to be personal, or deemed given to flattery, I cannot let the opportunity pass without acknowledging the debt of gratitude I feel to a member of this society in placing in my reach and possession an instrument to which I ascribe my entire success in the preparation of root canals at one sitting, to receive the crown fillings. I refer, as you know, to the root dryer of Dr. J. H. Woolley, without which I would not continue the one-sitting process.

And now to retrospect, to review—are there any impossibilities stated in the foregoing, are there any illogical deductions drawn? You will all recognize the fact that these several steps can be followed in less time, or as much at any rate, as the detailing of them will require, and why shall a patient be required to spend from three days to three weeks in running to our offices when the end can be accomplished in one hour of continuous work. A case in practice comes to mind—a confrere resident in one of our suburbs had for a patient a lady about thirty years of age who lived on the west side and consequently a great distance from his office. One of the lower bicuspids had abscessed and the patient had spent her time and money for several months in semi-weekly visits to her dentist with the result that each time the tooth was tightly sealed the inflamation would reappear. At last the dentist feeling, I guess, that he had exhausted his list of remedial agents and seeing that the patient was tiring of her continuous and repeated visits so great a distance, told her that if she had any trouble after his last treatment to call on me and ask me to attend to the case for him, as she only lived a few blocks from my office and it would save her considerable time and expense. It was only a few days when the patient applied to me with a terrible sore tooth and considerable pain. After getting a full history of the case I removed the dressing in the root, found considerable suppuration, and after washing out as much as possible I filled the canal with carbonate of soda, and dismissed the patient for three days. (You will recognize that I was dealing with another man's patient and felt that I would take no risks so I gave two treatments). At the appointed time she returned. When the saponified residue was washed out and a line of treatment similar to what I have detailed above was pursued. The root was filled with oxychloride of zinc and hydronapthol (at that time I had not used chlora-percha) and the crown filled with oxyphosphate, with instructions to return to her dentist at the end of two weeks and have a gold filling inserted. The dentist afterward called upon me, stated that he had filled the tooth with gold, thanked me, and asked me to tell him what I had done to that ——— tooth.

Another case—A lad about 18 years presented r. l. bicspid terribly decayed, jaw considerably swollen, but as he lived within a few doors of my office where I could watch him I wanted him for an experimental case. He wanted the tooth extracted. It was in the forenoon and I had a patient in the chair, so I opened into the pulp chamber when his mouth filled with pus and he was to some extent relieved, I told him to call again at 2 o'clook, which he did, when I adjusted the rubber dam, cleaned and filled the roots and crown. It is now about five months and I see the patient often and he is delighted that he did not have the tooth extracted. Now the question may very properly be asked, from what I have stated, if I would advise the filling of *all* roots at one sitting. I would answer: Not till the good Lord concludes to make each and every individual exactly alike, can we presume to lay down one unalterable, infallible rule to apply in all cases. Judgment must of course be used in any and all operations of surgery, no matter how trivial they may appear. But I am willing to be placed upon record with the statement that the conditions forbidding the procedure are the exception by far and not the rule. I believe the fact is established, and one upon which there is no difference of opinion at this time, that all aseptic canals are ready to be filled. I, also, believe the fact established that all canals possessing an exit through a fistulous opening in the gum may as well be at once cleaned and filled. Thus you will see these two facts would probably embrace three-fourths of all the canals we are called upon to fill, leaving a small minority about which there would be question. In reflecting upon this minority the principle reason, usually given, that would negative our procedure would be the fact of no existing fistula, or what is generally termed a blind abscess. This fact *alone* I cannot accept as reason sufficient for protracted treatment, as experience has shown that (though possibly provoking an acute pericementitis for twelve hours or more) in a vast majority of cases the great tendency of nature to reassert herself and the physiological proclivities being so much greater and overpowering the pathological in her effort to return to health, that victory will at last be proclaimed upon the right side, and a complete subsidence of all outward manifestations will be the result. Should I fear however that the vital energies of my patient may be taxed too greatly, I always anticipate and relieve the immediate pressure by establishing what nature has thus far failed to make, an artificial fistula, and prescribing a few doses of some of our newer anti-neuralgics and analgesics.

From the above, what would we conclude to be the essentials to success in root filling? First, perfect dryness; second, no vacuum; and third, as precautionary and preventive, drainage, as in all surgical cases in other portions of the organism. I can say, with the editor of the *Western Dental Journal*, that immediate root filling should not be practiced unless dryness, which is the first step toward an aseptic condition, can be secured; and this condition I believe can as well be secured in blind abscess as in those with a fistulous opening (hemorrhage excepted). So much so am I convinced of this fact, that I have reduced the conditions to two that would prevent and forbid an attempt to immediately fill a root presenting for treatment. One of those conditions, and the main one, is the impossibility to dry the whole of the dentine. This will be the case at times in persons of a hemorrhægic diathesis. The other where the tissues are so swollen and painful as to render it cruel to operate at that time. The treatment I can but regard as philosophical and logical. It is but a sequence of a proved knowledge so beautifully illustrated to our society by Dr. Andrews, of Cambridge, at our recent clinic, that the disease is the result of sepsis, and when the septic condition has been removed, and its place taken by an impermeable and indestructible filling, a certain cure must result, just as certainly as if the canal had been obliterated by the extraction of the tooth. Any remaining products of the once-existing irritant will speedily be absorbed and changed into healthy cicatricial tissue. One condition may exist that would retard and probably prevent a subsidence of all irritation, and that would be the presence of necrotic tissues either in the root or maxilla. In the successful treatment of this condition, however, the passage through the root is not essential, and would not debar me from filling the root, as I would continue the necessary treatment through the gum, and expect, in time, a recovery.

The question also arises, if it is deemed hazardous to immediately fill these canals, why is it? What would result? What could result? Well, although the past life of this subject is short, there is hardly any pathological condition that has followed an operation that has not been attributed (not to the filling of the root, not to the existence of an almost foreign substance imbedded in the tissues, not simply to dental irritation, but) to *immediate* root filling. A case is reported in the February number of the *Archives*, in which considerable mischief is said to have resulted from *immediate* root filling. The reporter of that article starts out by saying that the patient was served by a *fine* operator, and winds up the facts of his statement with the remark that "the other tooth was *reamed out* and filled." Well, if this reporter has told the whole truth, and nothing but the truth, about the operation, I do not see how any but unfavorable results could be expected. *Reaming* out and *digging* out are certainly not very euphonious terms to the professional ear, and certainly cannot be said to constitute the necessary steps to any surgical procedure; so that, if the statement can be borne out by the facts, the results were certainly not from *immediate* but from *imperfect* root filling, which may have occurred in any case treated for months.

As stated before, almost all varieties of reflex and disseminate neuroses have been attributed to this operation. You all remember a case presented to this society only a few meetings ago, and reported as a result of immediate root filling—a case of alopecia areata. Now, although in the highest degree probable that alterations, and particularly shedding of the hair, may at times be dependent upon nervous influence, yet exact proof of this fact is still wanting. The affection, according to late investigators, is considered as a tropho-neurosis. Experiments have been made, and clinical observations recorded with reference to the influence of disturbances of nutrition, and also of psychoses, upon the condition of the hair; but the data so far obtained is extremely deficient. Joseph has asserted that such a thing as a distinct bundle of trophic nerves does exist, and also that he can produce a circumscribed alopecia in cats by the extirpation of the spinal ganglea of the second pair of nerves of the neck, together with portions of the neighboring posterior and anterior roots. While these observations thus far made, taken singly, would not be convincing, yet, viewed collectively and in connection with the physiological experiments, we seem to have strong evidence of the tropho-neurotic nature of circumscribed alopecia. Hence it would appear that any irritation reflected to the trophic centers might result in this condition, especially so when we notice that headache is one of the commonest premonitions of alopecia. Cases have also been reported in which heredity was an etiological factor in alopecia areata; and when the neuropathic predisposition is present, very slight influences are enough to cause the appearance of some nervous disease. The most prominent causes, however, are the traumatic and the psychical, and it is not astonishing to find the disease following either of these causes, when we reflect that it is only the mergizing of a hereditary proclivity. The question of age has also entered into the inquiries upon this subject, and 12½ years was found to be the average at which the disease appeared; so it has been suggested that it is in some way connected with the second dentition and puberty; but the fact is not established, and at present we are only certain of one condition dependent upon the trophic nerves, and that is the suspension of their activity, giving rise to subsequent atrophy.

The foregoing may indeed seem a digression to you, but it has proved interesting to me to collect these facts, in order that we might more thoroughly understand the etiology of a pathological condition reported to us as a result of immediate root filling.

I am satisfied the reporter of the case did not intend to convey the impression even that the disturbance was caused by the abstract fact of *immediate* root filling, but that it was the effect of an ill-judged dental operation, resulting in a dental irritation, reflected through the sympathetic ganglia to the trophic centers, and arousing, in the case presented, a predisposed hereditary proclivity. I have too exalted an opinion of the diagnostic powers of my friend, not to take this view, especially as I could report another case similar, of a young girl who glories in the possession of two bald spots, about the size of a silver dollar, upon the right parietal region, which ceased to enlarge, and again began to be supplied with a new growth of hair after the extraction of an upper molar tooth (which had never been filled) and a few visits to the Sutherland sisters.

PRESIDENT'S ADDRESS.*

BY DR. H. C. MILLER, GRAND ISLAND, NEBRASKA.

I begin my address with the confession of Antony: "I am no orator, but as you know a plain, blunt man. I have neither wit, nor words, nor utterance, nor the power of speech to stir men's blood. I only speak right on. I tell you that which yourselves do know." A century ago, this year, our government was established, and it will not be amiss to compare the status of our profession with the same of other countries. One hundred years ago dentistry had been practiced for some years in European countries, in France especially. How did dentistry compare in this country with dentistry practiced in Europe? We are informed that the "Father of our country," wore a set of artificial teeth, and as long as history remains recorded, this fact will be recorded also.

We may as well date the begining of dentistry from the establishment of our present form of government.

What has been accomplished in the last century? It is, indeed, wonderful to think that one hundred years ago this country was supplied with only one or two men practicing dentistry, and these eked out a scanty livelihood. To-day we are proud to mention the fact that not less than 18,000 dentists are scattered all over this great country ; not only in numbers have we made such wonderful progress, but in workmanship as well, the manner in which dentistry is practiced has held equal pace with the increase of its members.

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* Nebraska State Dental Society.

Fifty years ago dentistry was considered a secret business. Each man guarded his office and laboratory as much as a sorcerer would guard the recipes for his different prescriptions. Any one desiring to get an insight into the business at that time, had to pay an enormous sum of money for what he learned, and in addition obligated himself not to instruct any one under any circumstances. But luckily for the country as well as for the profession, a few men operating in harmony endeavored to improve the condition of affairs. Baltimore made the first move in the right direction. Here the first Dental Society was formed, mainly due to the effort of Dr. Harris. Shortly afterward the first dental college was instituted under the guidance of the same men, who were rather advanced in their ideas at that time.

They met with much opposition, as all movements in the right direction do. They had to fight hard, but they certainly succeeded in gaining the desired point. They succeeded in having dentistry recognized as a profession, and have removed the prevailing idea that dentistry was a business of charlatans. From the time the first college was established, up to date, many dental colleges have been chartered, of which thirty-one are in active operation, and issuing diplomas.

Nebraska is one of the States not in possession of a dental college. Nevertheless we are proud to say that this State is not the last one to enact a sound and effective statute, regulating the practice of dentistry. A short time ago I was told that the Nebraska State Dental Law was one of the best ones in force in the different states, where laws exist. There are comparatively few States which have not some sort of a dental law.

The young men of the profession enjoy the gratification of seeing the charlatans in the profession die out, or reform, and we will be able to say, " Our profession is an honorable one, and its members are honorable men." This is principally what dental societies aim to accomplish; in working in harmony we all improve our condition.

Some States have societies which can hardly be considered representative dental societies, since their membership is proportionately so small that they ought not be called "State Dental Societies." The Nebraska State Dental Society compares favorably with other State societies in this respect. We have as large a per centage, if not a larger one, than any other State society, but we should not stop here. Our State is young. The dental profession in it is represented almost entirely by young men, and why should not all be members of the State Dental Society? This is the aim we have in view and I hope to live to see this end attained. Our society is not limited in membership. Any one of good repute and practicing our profession as it should be practiced, may become a member, and I invite all dentists of the State to come and join us in our effort to improve our condition individually and collectively. Now a few words regarding improvements which have been made within last few decades. Up to about twenty years ago very few improvements were made. In 1870 dentistry began to improve in every direction. Up to that time the methods of practice were nearly the same as for fifty years preceding. The dental engine and the rubber dam were introduced, the latter article has been the greatest boon which we have in dentistry. There is probably not one article as indispensable as this simple one. Probably there is nothing so universally used by dentists as the rubber or coffer-dam, as it is sometimes called. Before its use there were few who were skillful enough to insert large gold fillings. To-day almost every operator is able to insert the largest gold fillings, even if he is not able to perform the very finest of operations.

Recently attention has been called to a kind of work, which for some years has been neglected. I have reference to bridge work. At the time of Dr. Marshal H. Webb's death, operative dentistry was at its height and bridge work was in its infancy. The operator just named might be said to have introduced bridge work again, although his method of inserting teeth was different from what it is now. His method was certainly the best, but practical only in a limited number of cases. Crown work and bridge work go hand in hand, the latter can hardly be practiced without the aid of the former. Crowns are to-day attached to the roots of teeth that a score of years ago were hopelessly lost or at least so considered.

More than this, lost teeth are replaced upon neat and handsome bridges where ten years ago heavy and bulky rubber plates had to be inserted. Taking all these things into consideration, we may justly ask ourselves the question, what progress have we made in the last century? No industry or science or profession can show greater improvements than our profession, save the industry or science of electricity, even this branch of science, although comparatively new, is largely made use of by dentists all over the world. In fact the time will come when electricity will be as indispensible in our offices as the rubber dam is at present. The members of the Nebraska State Dental Society may have an opportunity at some future period to recall this, the thirteenth annual meeting, and may then remember some of the points mentioned in this paper.

We may be over cautious, if from a sense of caution we are deterred from investigating new methods and improvements in the practice of our profession. With all due respect and reverence for the good we have learned from the past, I believe that as live, earnest, and enthusiastic practitioners of dentistry we cannot afford to ignore the work of our investigators, and we should make use of all inventions and improvements which serve to make us more efficient in our work. In this connection, I have a few words to say in reference to the reward due those who originate, invent and improve. It is held by some that any method or improvement which may be discovered should become the common property of the profession. That one should hold the profession in such honor, that he should gratuitiously present the result of hard work and study to his profession. This proposition may be noble and generous, but it is unphilosophical and discouraging to inventive genius; if universally followed, it would be detrimental to further advance. The world has a price for all good, honest improvements, and the man who renders any service is entitled to the reward which his work will bring.

I am no orator, but to the extent of my ability I am a dentist. I love the profession. I feel a strong fraternal feeling for those who are associated with me in the profession. I think a man cannot aim too high. We are bound by every feeling of manhood and loyalty to the profession to elevate it so far as possible. It is not a new trade, it is a calling, a vocation. It is full of opportunities, and its studies are fascinating to those who come into the profession with the interest and honesty and conviction which its dignity and usefulness to men entitle it. In closing, I congratulate you on the successful and harmonious manner in which you have conducted yourselves during the transaction of the business of this, our thirteenth annual meeting.

Thanking you for your kind attention, I trust that visiting friends will be with us as often as their time will permit.

NOTES ON OPERATIVE DENTISTRY.*

BY DR. W. W. VANCE, KEARNEY, NEBRASKA.

I call your attention to the preparation of cavities in general. The first thing to do, after having looked at the case and decided that it is necessary to fill, is to pass a piece of floss between the teeth, especially between the tooth to be filled and the one next to it, to see whether there is a sharp border that will cut the rubber dam; if it is not clear, with a suitable chisel partially break down the sharp border of enamel, but do not endeavor to finish that part of the preparation at this stage of the procedure, for fear of leaving the enamel checked by too forcible cutting; then adjust the rubber dam. The medium is most suitable in the great majority of cases; the thin is too easily torn; the thick is too hard to stretch over a clamp, if on the bicuspids or molars, and is too thick to be forced between incisors, at least with any degree of comfort to the patient.

I consider it essential to use rubber dam when filling, no matter what the filling material may be, for the reason that if we wish to perform operations that shall be, as near as possible, painless, we must keep the cavity dry. Whatever it is that makes dentine so sensitive, moisture is very necessary to the presence of that condition; consequently, the dryer we can get a cavity and keep it dry, the less pain we will inflict in preparation. After the dam is properly adjusted, wipe out the cavity with absorbent cotton or bibulous paper, preferably cotton, and with rapid excavators remove the soft portions of the decayed matter, and then observe the condition of the cavity. Prepare fully the enamel, or margin, and be careful not to use such force as to chip off large pieces of the enamel, but remove it by a number of light cuts, or mere scrapings. It will take longer to do this, but it will more than repay in the better results that will follow. Always cut the enamel so that the edge will be at right angles to the plane of the surface of the tooth and filling, as, by doing this, thin edges of either tooth substance or filling material are avoided, and more especially is this true of a filling-material that does not possess superior edge-strength, as amalgam or the cements, for instance. I would urge this point for the sake of the enamel alone, if the filling material possessed ever such good edge-strength. After having prepared the margins, proceed to excavate the decayed dentine, and make proper retaining points. These should be made with great care, for fillings are only held in position in the cavity in obeyance to mechanical laws; consequently the depth and position should be selected with a view of dividing the strength between the filling material and tooth-substance.

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* Nebraska State Dental Society.

Fissure cavities in bicuspids and molars will first claim our attention. While they may seem to be of little importance, they frequently do not receive the care and attention that they deserve, if we can judge anything from the appearance of fillings that have been in for some years. I think that the great difficulty lies in the fact that the softened enamel is not all removed, and the fine line of dark-colored enamel in the fissure, owing to its being so narrow, is very difficult to remove, as it seems so dense we are apt to think that the filling will last. It is inserted, and the result is that, after a few months, or perhaps, years, this fine line that was so hard to remove has been the vulnerable point, and the filling has been undermined. An otherwise good filling has been consigned to failure; for many of our patients are very exacting of fillings, and will denounce the dentist, and perhaps the profession in general, for the failure of a filling that has given reasonably good service. So there is only one safe way to proceed, and that is to be exacting in regard to preparation of all cavities, no matter how simple or apparently easy, and insist that the patient must submit to our judgment in having the time and necessary amount of cutting (which in this hard enamel on either side of the dark line is very annoying to them) properly done. As to the kind of material that this class of cavities should be filled with, I will say that where the enamel is reasonably good, gold is the filling material *par excellence*, and that amalgam should only be used on the score of expense; for while I may be enthusiastic on the subject of gold, I am not of the opinion that we should do all of our work at our own expense, simply for the reason that we wish to do the best thing for the case; if patients do appreciate gold themselves, but are not willing, as a rule, to pay for it, then, by all means, give them amalgam, but do not slight the preparation or care in manipulation of the filling material.

As regards amalgam as a filling material, it is not the use but the abuse of this valuable adjunct to operative dentistry that I object to. I will not attempt to say that the preparation of amalgam should be thus and so, for good results will follow, in many cases, when seemingly very little care is taken in preparing it for the cavity. Some dentists will tell you that it should always be washed, and others, who seldom or never wash it, will claim as much as the other who thinks one of the great items of excellence consists in thoroughly washing out any dirt that may be in it. I am inclined to think that the difference in their observation is not so much in the cleanliness of the amalgam as in the quality of the alloy before it is mixed with mercury. I prefer, in my own practice, to use some of the G. & P. alloys, thoroughly rubbed up with the mercury, avoiding an excess, packing the alloy in small pieces, and gently tapping with the plugging instrument, being careful, as the filling progresses, to wipe off the surface with bibulous paper or absorbent cotton if it appears to contain a larger amount of mercury than it should, This is very particular toward the last, if you wish to get good results from your filling, especially at the margins. As for cements I will say but little. I do not consider them of value for anything but temporary fillings and for deciduous teeth.

The next class of fillings that I will call your attention to are contour fillings, in the anterior teeth. The same general rules apply to these that apply to other cases under consideration as regards preparation. I will preface my remarks in regard to this class of cases, by saying that more contour fillings and less of what are termed approximal fillings are what we want, for the reason that where approximal cavities are prepared as simple cavities, if the cavity is large, there is a point of unsupported enamel which in time will be very apt to check, probably owing to expansion and contraction of the gold in the cavity, and we are confronted, or some other dentist is, with a tooth, in which the filling, if not already loose and consequently worthless, will have to be removed and the tooth contoured at last ; for this reason I am of the opinion, that to do a thing right in the first place will give better general satisfaction than to take any risks.

In the construction of contour fillings, secure anchorage is the first thing to be thought of, and after this has been accomplished, then to build a filling that will not break off the first time any strain or pressure in biting is put upon it. The electric mallet is better than any other known appliance for building out gold, if you wish to do so rapidly. In constructing a contour filling, as soon as you can, get the center of your filling higher, and keep it so; do not try to build up a filling and keep the surface on which you are building any where near level or flat, for if you do, you lose sight of an available, mechanical advantage; for in a flat surface you have nothing but the cohesive quality in the gold to keep the filling from separating, but when we have a bulge in the center, and are using foil folded flat, the rapid blows of the electric mallet thoroughly condenses the gold; if the pieces are laid on so as to overlap and cross each other, we have a contour that is composed of fibers of gold running in such direction as to brace the contour, to break it off, we must literally tear the foil as it exists in the folded pieces, before the filling can break. Do not be afraid of cutting too much, a large contour, if you have plenty of room to work, can be built by the aid of the electric mallet quicker than a much smaller, simple cavity can be filled, if properly done, where you have insufficient room to work; especially true, is this, of the last pieces of gold to be put on the filling.

In finishing up a filling, the sand-paper disc is the best thing, and this should be done before the rubber dam is removed. If you have trouble with the disc catching the rubber, the disc revolved with the edge cutting into a piece of soap, kept conveniently on the table, will in a large measure prevent this. Discs, however, should not be revolved very rapidly, nor should they be held against a tooth and its filling for too long a time, for the friction generates heat very rapidly. This point, however, the patients will carefully attend to, and you will do well to heed their remonstrances quite frequently, only to resume operation, however, as soon as the tooth is cooled.

Another class of fillings that I wish to call your attention to was alluded to in the beginning of this paper but not particularly described. I have reference to approximal cavities in bicuspids and other teeth. If these are properly prepared, the vulnerable point will be at the cervical margin, but when prepared, as I have seen a great many, this point is not more susceptible to failure than the lingual and labial margins. In far, the greater number of this class of fillings it will be better to open the cavity down, or up, as the case may be, to the crown of the tooth. But do not be afraid of cutting too much, if the cavity is not large it will be better to open it out until you get your margins, so they will not touch ; otherwise you will see the fillings show unmistakable signs of decay, before any great lapse of time. If there are two cavities, it will be imperative to build the margins of both out, but one must be, and it will be better for both to be built out, for the reason that there will be no danger of decay at those margins, or at least the danger will be reduced to the minimum. One more point in reference to this class of fillings, and that is that while there should be space enough between the fillings so that floss can be passed, there should not be a wide space left for food, and especially meats will be crowded against the gum and produce pain ; patients in their endeavor to remove it with a tooth-pick irritate the membrane around the tooth and cause a great deal of trouble ; contour fillings, and bring them as close together as possible.

The field that electricity occupies in the art of dentistry is certainly very important. I rate the application of electricity in displacing the engine as primary. With the motor mounted properly at the side of the chair it is always ready, and can be used without any exertion on the part of the operator, and his whole attention can be devoted to the work he is doing. A motor should be as quiet running as possible, its armature should be in a perfect running balance, and this point should be carefully looked after, for very few of those on the market are what they should be in this respect; the speed should be under good control, and should be as high as four thousand revolutions per minute, but it should give plenty of power when running as low as two thousand revolutions per minute, which speed may perhaps be better for some purposes. As to the position of placing it, I would say that this is a matter of taste more than anything else, but I prefer it attached to the chair, or the combination bracket, for the reason that it is always ready, and can be swung around out of the way very much more easily than if it is mounted on a special stand, or as some of them are, on the top of the bottom frame of the ordinary dental engine. For excavating, in using the motor, sharp inverted cone burs should be used; while running at a high rate of speed the cutting should be made by slight touches and the bur should not be held in one place until it produces heat. There are very few cases in which the preparation cannot be more easily done with inverted cone burs than with round burs, and certainly with much less pain to the patient; as for wheel burs, they occupy a place in my tray more as a matter of having an assortment than for any frequent use that I would make of them. They may occasionally reach a point that nothing else will do quite so well, but these cases are so rare that I do not consider them of any importance.

Of course, burs to cut without inflicting pain must be sharp, and the knives or cutting edges should be deep to accomplish this; burs must be selected that are not fine cut but rather have few blades, the object of this is to give good clearance space and prevent the bur from becoming clogged, acting more like a burnisher than like a good cutting tool. As it is in the dentine that the pain is mostly inflicted, and not while cutting enamel, I would be careful to use certain burs for cutting enamel and keep others of the same size and shape for use in the interior part of the tooth.

It has been said that it is troublesome to take care of a battery. This is true of the primary battery, but thanks to modern ingenuity and skill in electrical circles, the primary battery is almost a thing of the past. Where persons are not fortunate enough to be located in a city where power circuits are maintained, the storage battery is at hand to come to their rescue, for there are very few towns of any importance where they do not have the arc or incandescent lights, and where either of these can be made available; the storage battery can be switched into the circuit, and when the battery is charged, it can be cut out and a good efficient current can be had at small expense for the next day's work.

Next comes the larger motor for laboratory purposes. Where power circuits are available they do more to lighten our labor than anything furnished to us in modern prosthetic dentistry. It fully displaces the power furnished by foot and is a great deal more steady, always ready and causes no trouble, saves one-third of the price of a motor in not having to have a foot balance wheel, besides having it run a fan and furnishing a delightful breeze to cool yourself and patient on a hot day while operating. Then comes the electric mallet, than which there is nothing nicer for a great majority of cases in gold filling, especially large fillings and contour work. Beyond a doubt the greatest drawback to the more universal use of the electric mallet has been in the trouble of having and keeping a battery in good condition and the consequent failing of the electric mallet to operate properly just at the most important time in the process of filling. The direct current and storage battery does away with all this, and makes the operating of motors and mallets a pleasure to yourself and a comfort to the patient.

The electric mouth-lamp is simply a miniature incandescent lamp mounted so as to throw a light directly into a cavity, when located in such a position as not to have the light directly reflected from the window or sky-light. This must be seen and used to be appreciated. No words can adequately describe the benefit and utility of this novel application of electricity.

If I have said anything that will lead you to do more thorough work in operative dentistry, then the object of this paper has been accomplished. Any one practicing dentistry must know that there is a tendency in these days to do work cheaply, and with many of us time is an important item. To save it we are frequently tempted to hurry our work; in no line of work is the saying more patent, that "work done in a hurry is never done right."

There is greater demand made on our skill than in years past; the public are being educated to the fact of the superiority of the natural teeth, and they are endeavoring to preserve them with more tenacity.

DENTAL FEES.*

BY DR. A. S. BILLINGS, OMAHA, NEBRASKA.

I trust that the facts which I shall endeavor to briefly present to you to-day will provoke discussion, and be worthy of serious thought. I hope that in time a very material change in the present system of dentists receiving their just dues for time and services may take place, and that this may lead to the meting out of justice to our patients as well. That for one service we should receive ten times as much as for another is not just, but an injustice to both.

I do not remember ever to have heard any comments on this subject, and is it not of the first importance? We choose the vocation in life that we expect to be remunerative; in fact, the one we believe most remunerative. The good that can be done is usually a secondary consideration. It may be that we are in error in this respect, but it is human nature.

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* Nebraska State Dental Society.

I was told by the agent of a dental dealer that 95 per cent of the profession cannot, or do not pay for the materials they use at the time of purchase. The barber is the slowest to meet his obligations, while the dentist is next. What a commentary on a profession, that its members cannot pay for their instruments and material, and are classed as poor pay.

We can only blame ourselves—it is the dentists' own fault. How shall this be remedied? Let us compare our prices with others and their prices. I have confined myself to my own city and surroundings, and have compiled a short list to lay before you.

March 6th, my first attention was called to a professional wall paper cleaner. He would not work at my house for less than $1.00 per hour, and then he wanted to do it by the job and make time on that, with only a chunk of bread and step ladder constituting his outfit.

A plumber boy, from 16 to 18 years of age charged 75 cents for a half hour's work.

Potter and Miller, revivalists, $100 per week each with expenses paid, board at Paxton paid.

The German, with his grind-stone and files for sharpening butchers' tools, told me he earned $15.00 per day in summer, but in winter only about $2.50.

A colored man charges me from one to two dollars per hour for pointing up chimneys; he has the outlay expense of two hods of mortar.

The music teacher has $5.00 per lesson, of from one-half to one hour, and charges for broken engagements.

The elocutionist, for readings before half dozen or more ladies at the church, as a special low price, $3.00; time, 30 to 45 minutes. Regular price, $5.00 per hour.

The oculist, for fitting glasses to eyes, $10.00; fifteen minutes' time.

Tobacconist—A young man just out of clothing store, with $700 capital says he makes $200 per month.

Let us see what value the dentist places on his time. In Omaha you can get rubber dentures repaired for $1.00 or $1.50—three hours' work. A new artificial denture for $6.00 or $8.00 (and as much more in value for extracting) all for $6.00 or $8.00; besides a long advertisement in the paper, giving due notice where one can find your man for these wondrous low prices.

What are your prices for a large posterior aproximal cavity? Very low—below the margin of the gum and nearly exposed pulp. How much do you get per hour? How much do you get for cleansing teeth, and how much time do you spend?

Is it not time to call a halt, and have a reasonable sum as compensation for your services?

I say the true way to yourself and your patron is a charge for the actual time spent, a stated sum per hour. Till this time comes, there is little justice in our dental fees. An extra charge can be made for gold used or material as the occasion may require.

It is the dentist's own fault if he is at present poverty stricken, and is giving the best days of his life away, to be in his last days a prematurely old and nerveless man, depending on his day's labor for the support of himself and family.

Show me the man of ten, twenty or thirty years' practice who has a competence. You cannot, because they are not in the State of Nebraska, and never will be, unless a change is made.

THE TREATMENT OF PULPLESS TEETH.*

BY DR. J. S. McCLEERY, BEATRICE.

To the writer, and I think I may safely say to the dental profession in general, this is an intensely interesting subject. The writer feels that by himself, at least, very little that is new can be written on the subject, so that he cannot bring in every point that ought to come under the heading of the paper in our discussion.

The title given the paper relieves the writer from the discussion of the previous condition of the tooth as cited, the means employed to devitalize it. We will enter at once upon the treatment of pulpless teeth, whether made so recently or at some remote period.

Rules of treatment can hardly be formulated for the treatment of this or any other pathological condition that are not subject to exceptions. There are conditions in regard to the age, temperament and health of the patient, besides local conditions, and the most successful man looks over the whole field.

The writer will consider the condition in which we find pulpless teeth under four heads:

1st. Teeth that have recently been devitalized.

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2d. Teeth that have been devitalized for some time but are without noticeable irritation.

3d. That condition known as blind abscess, usually suppuration but without a fistulous opening.

4th. Alveolar abscess either acute or chronic.

The first condition mentioned is the freshly devitalized tooth. If there is no inflammation in the peridental membrane or hæmorrhage that cannot be completely controlled, the writer would fill immediately. In case of peridental inflammation, thoroughly cleanse the canal, fill it with cotton and change the cotton in the canal as often as twice a week until the inflammation has subsided, and then fill. In case of hæmorrhage fill as soon as a complete dryness can be secured.

The second condition mentioned is when the pulp has been dead for some time with no noticeable irritation. The writer would cleanse and fill at one sitting, believing further treatment than this not only to be unnecessary but that it will do more harm than good, and that the use of antiseptics in such cases will often make a simple case difficult, besides being a waste of time and labor.

The third condition mentioned is blind abscess where there is serious inflammation and without a fistulous opening. In this class of cases it is necessary to open up the nerve canals and cleanse as far as possible of all septic matter, fill the roots with cotton and dismiss the patient with instructions to come each alternate day to have it cleansed. As soon as the inflammation has subsided and suppuration has been diminished so that perfect dryness can be secured, fill. If the work is carefully done there is no need of any speculation about results. The inflammation is caused by septic matter in the nerve canal, and you reduce the inflammation by cleaning that out, fill while there is no noticeable irritation, there is no disease and the cause of the trouble has been removed, and we can safely say the abscess will take care of itself better than we can take care of it. If you stop the fountain the stream will run dry.

The fourth and last condition mentioned is alveolar abscess.

In case of acute alveolar abscess it is generally best to evacuate the pus, and let the tooth rest until the extreme soreness has somewhat abated; after this, if found necessary, the tooth can be opened from time to time for the discharge of pus that may accumulate, but in the majority of cases this will not be a necessity. It is quite safe to dismiss these cases for a week or ten days, advising the patient to come back immediately if then they have a return of pain. As a rule the case will be well on the next visit of the patient and the root ready to fill.

Chronic alveolar abscess differs from acute in that there is no soreness or any considerable inflammation to contend with. The treatment relates wholly to the removal of the cause, perpetuating the discharge of pus, and if the cause is removed, the tendency is to a spontaneous cure. The treatment of the common forms of alveolar abscess consists merely in removing the débris from the pulp chamber and root canals, cleaning them and filling.

In treating alveolar abscess I wash out the entire cavity of the abscess with peroxide of hydrogen.

The pulp chamber should be well opened with drill and burs, so as to allow free access to the canals in the roots of the tooth.

The enlargement of the canals with the bur or drill is not to be recommended.

Now, a word in regard to the material used for filling roots, and I will leave the paper for your discussion.

In reading the account of a dental society meeting in Philadelphia, the essayist on the subject made a masterly defense for cotton as a material for filling roots, and in the discussion I think every material I ever heard of was discussed.

One old practitioner got up and said, "I suppose you will be surprised, but with the exception of incisor teeth I do not fill them with anything. They all claimed that from 90 to 95 per cent of their work is successful This would probably be repeated here today if the roll was called and each one were to tell what he used for root filling. The writer invariably used a solution of gutta-percha and chloroform, pumping it in with a broach that will reach to the end of the root. If I can have direct access to the canal, take a nerve canal point of gutta-percha, dip in the solution and press it into the canal until I am reasonably sure that it has reached the apex of the root. You can fill any root with the solution that you can enter with a broach, either direct or indirect, if the cavity is dry.

If there is any doubt of the solution not flowing, I wash the canal out first with chloroform and it will follow in the track of that and will flow anywhere the chloroform will if the air is pumped out of the space.

While I do not claim perfection in this work, I think I have a reasonable degree of success, and while I have not dealt with this subject in detail, I have tried to outline my mode of practice in this part of our work, and I hope that if this paper has not been of interest to you the discussion of it may give me some new ideas and that I will be benefited by it.

MECHANICAL DENTISTRY.*

BY DR. H. T. KING, FREMONT.

After the introduction of rubber, that part of our profession known as mechanical dentistry seems to have taken on a retrograde movement. If I read history aright, there had been a cry for a cheap base on which to mount teeth for those who could not afford the higher-priced work then in use.

When a material was found that was so easily manipulated that an ordinary genius could, after two or three months' instruction, pack his carpet-sack and go forth to *improve* on the designs of the *great* Creator by extracting those gems that He had placed at the very portal of the alimentary canal, there not only to remain through life, if properly exercised and cared for, but to assist in *maintaining* life for the allotted three score years and ten, by performing the functions they are so admirably adapted for when in a healthy and normal condition, and replacing them with little porcelain tombstones that are so even, white and pretty, and will not ache.

When the cheap base came, the profession found themselves in the condition of the man who prayed for rain in a dry time, and the floods came and washed out his crops. They had too much of a good thing. And so we had an eminent professor, some twelve years ago, saying before the American Dental Association that "Mechanical dentistry is in a lamentable condition; it receives no countenance or encouragement from the best men; they have, to use their own expression, 'washed their hands' of it."

By the way, what is mechanical dentistry? and why should the "best men" (which always means two or three other fellows and myself) "wash their hands of it?" It strikes me that if you eliminate all that is mechanical from dentistry, you have very little left; so little, indeed, that you can willingly permit it to be called a specialty of medicine, if the M. D.s would own it.

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* Nebraska State Dental Society.

Take pyorrhœa alveolaris. Whole volumes can be filled with what has been written and spoken on it; and it makes very interesting and instructive reading; but when you come to the treatment, it can all be said in a few words. You mechanically remove the deposits, mechanically fasten the teeth so that they will remain fixed in one position, and, if a cure can be had, you will have it.

It may be that the true cause of decay in teeth has been discovered, and we may, in a measure, be able to prevent it. But I apprehend that, so long as the world stands, the dentist will be called upon to use a very ingenious little machine, to mechanically remove decay from teeth, and, by the exercise of that mechanical ability that all successful dentists must possess, mechanically replace the lost portion with some substance that will fit so close as to prevent the little bugs from crawling under to satisfy their ravenous appetites on the healthy tissue beyond.

Do not understand me as speaking disparagingly of operative dentistry. Our aim should be to save every tooth possible, as long as we can; but the fact nevertheless remains that, do the best we can, we sooner or later will lose some teeth and crowns of others. To replace these, as well as to supply those who, from neglect or financial inability to have these saved, lose them, dental prosthesis must come to our aid.

Instead of regulating rubber to the position it should occupy as good, but not universally the best material to be used, the "best men" have allowed the public to be taught that a set of teeth is a set of teeth; that plain teeth make a temporary set and gum teeth a permanent. Can we, then, expect but that the man who makes his set of teeth the cheapest will be largely patronized ?

If each of us will strive to do better and more artistic work, we can do much to keep that part of our profession out of the hands of the cheap Johns, and elevate it to the position it should occupy.

In looking over the dental journals and society transactions for the last three or four years, one will be convinced that the tide has already turned, and the introduction of crown and bridge work is bringing it about. The man who to-day is not doing crown, and, in favorable cases, bridge work, is behind the times, and will get left unless he moves forward. When familiar with the working of metals in crown and bridge work, it is but a step to gold plates, continuous gum work, or the many combinations that come in to make our work more durable and artistic.

It would not be becoming in me to enter into the minutiæ of the construction of an artificial denture before this society, but I may hope in offering a few points to start a discussion that will be profitable to each of us. Some will come to us with teeth out, process absorbed, and there is no choice but to take impressions and do the best we can. Others come for advice as to what is best. If a plate is to be made all roots are to be removed, and if there are but two sound teeth remaining they should be extracted, as a rule. Usually the cuspids will be the remaining teeth, and if the only ones, remove them. But if two or three others (third molar excepted) can be retained, save them. We hear and read a great deal about restoring the human face divine. Gentlemen, it cannot be done. The fact that the face is divine, created by the omnipotent one, and pronounced very good, should teach us that human agencies are inadequate for the restoration of it to its pristine beauty and usefulness. As well may the oculist expect to give to a glass eye the ever varying expression that mirrors forth the emotions of the mind, as for us to expect that the muscles can move the lips over artificial teeth with a natural expression when one-third of the maxillary bone has been absorbed, and their attachments more or less interfered with. So I say, keep the cuspid teeth if even two or three others can be so restored as to remain any length of time. It is my experience that we have less trouble with partial than full sets, and that the appearance in the mouth is better. At least the neighbors cannot complain that "they do not look a bit natural," if we match the remaining teeth.

I always advise making a plate in from ten to twenty days after teeth are extracted, but try to impress on the mind of the patient that it should not be worn more than a year or year and a half before being changed. The wearing of temporary plates too long, and the wearing of full upper with only the six anterior teeth below to antagonize with them, is sure to cause too much aborption of the process in places, leaving the gum tissue in a flabby condition very unfavorable to good results when teeth have to be reset. Insist then on the importance of a new plate as soon as tissue is sufficiently absorbed, and on the wearing of partial lower, when but few teeth remain.

Before taking an impression, examine the mouth well to see in advance, as far as possible, what difficulties will have to be overcome.

Just here let me give a short rule for gaining a good reputation in making plates. Do not promise much, and do more than you promise. Do not wait for them to come back, complaining that the teeth do not work well, to tell them that they have a bad mouth to fit, etc.; but impress on their minds from the start that there will be more or less annoyance connected with the wearing of artificial teeth that only patience and continual trial will overcome. I never tell a person that they have a good-shaped mouth, and will have no trouble in getting a fit, as I have found that often those cases that promised the least trouble have caused the most.

Unless I hear better arguments in favor of some other material than I have yet heard, I shall consider plaster as by far the best material to use for impressions. I will not attempt to tell on paper how to take an impression, but be sure you have a good one before going further, as that is the foundation on which your work is to be builded. Before filling the impression for the cast, I touch the deepest places and bottom of impression of teeth, if any, with thin writing fluid. This will stain to a sufficient depth that the impression can be rapidly whittled away, and give warning when near enough to the cast for the plaster to break easily. Pour over the impression a thin solution of soap before mixing the plaster, and before filling it give a dash of water. Commence at one side with plaster, not too thin, and fill by putting plaster on top of the first put in, and with the spatula cause it to run round and drive out the water. If fine plaster is used, properly mixed, this gives a cast smooth enough for all practical purposes. If it is to be used to obtain a metal cast, the surface will need to be prepared for molding; but if for rubber work, I allow nothing but wax on the cast until packed to go into the vulcanizer.

Now and then we have a mouth for which some slight changes in the cast must be made in order that the plate may bear on all parts alike. Dr. Haskell, in his "Student's Manual," very plainly points out what these changes are. I do not consider it a universal rule, however, but think rather that in the majority of cases we had best work to the impression and not do any guess work.

After taking the impression we sent our patient away so that we could have plenty of time for plaster to set and dry out, to get up trial plates, etc., and now that he is back the next day, we are ready for the "bite."

This with some seems to be a difficult matter. Take an old tin can half full of water, throw in a lot of scrap wax and set it to warm; when soft enough to handle, take out a handful and work it over, rolling out a good sized roll; take plenty of wax, or there may be some teeth on the opposite jaw that you will not get impression of. Place the wax on the trial plate, put it in the mouth and tell the patient what you want to do, that they must close their mouth natural and be careful not to throw their lower jaw too far forward. Do this according to directions, and the chances are ten to one you miss it. I have seen the bite taken in that way many times, and set up teeth from them, so I know how it is myself.

To get one that you can rely on, take a little time and do not try to get your guide for the proper occlusion and the impression of the teeth in the opposite jaw at the same time. After placing the wax plate on model so that it accurately fits, I stiffen it with a wire bent to correspond to the curve of the arch, and build up wax until I think it is about right, then by repeated trials in the mouth, adding to or turning make the rim of wax so that the lower teeth will touch evenly all round and represent just the length I expect to set the teeth. The patient not having been asked to do anything in particular, but repeatedly closing on the wax, is by this time doing so naturally, and if you soften the surface a little, and the next time, after the teeth are resting on it, have the mouth closed a little harder you are almost sure to be right, and will have the wax marked with cusps of teeth as a sufficient guide for placing the cast to be made from the wax impression of the opposing teeth. If arranging for both upper and lower set, make each trial plate the length the teeth are to be, and after trimming to come together evenly all round, fasten them together in the mouth with little pieces of bent wire, or mark in such a way that they can be put together in the same position out of the mouth.

Note the importance of having the wax represent the length of the teeth, for if you change the length of the bite with the screw on the ordinary articulator, it will throw you off, no matter how accurate the bite may have been.

A few words on teeth and I am done. First, have a good stock of teeth in your office to select from. You say, I cannot afford it. You cannot afford to be without them if you expect to do work that will be satisfactory to yourself, and please the class of people it is most to your interest to please.

I can conceive of nothing more unsatisfactory than selecting teeth from samples or guess and sending for them, or *making a set do* because you happen to have them.

In the mouth is the only way to select teeth, and you can try in a number of sets in a few minutes, not only making a selection that will be satisfactory to yourself, but by getting the patient to approve of those selected, you can throw the responsibility on them, and sometimes save after trouble.

If you are getting a fair price for plate work (and you can if you will), I would not put in the cheap teeth. It may be that the fifty cents, seventy-five cents and one dollar teeth are as good as the higher priced ones. But I will not admit it, any more than I am willing to admit that the $7.00, put-up-while-you-wait set of teeth, is as good as the ones you gentlemen put time, thought and experience on, and get two or three times as much money for.

Durability of Replanted and Implanted Teeth.

By C. L. Goddard, A. M., D. D. S., San Francisco, California.

In order to assist in the collection of cases from which the average durability may be estimated and an idea formed of the probability of success, I report the following case of which the first record will be found in the Transactions of the California State Dental Association for the session of 1881.

June 15, 1881.—During a discussion on transplantation I reported as follows :

"I have had no experience in transplantation, but I have had a case of replantation that was quite interesting to me. I was called to see a patient, a little boy nine years of age, who was performing on a trapeze when one of the ropes broke. He fell, and the result of the fall was that both superior central incisors were knocked out of their sockets. When I saw the patient they were then out of the sockets and perfectly dry. The teeth were not fractured at all, and the walls of the sockets seemed to have sustained no fracture. I took the teeth to my office and after rinsing them with dilute carbolic acid, removed the pulps and filled the canals with gutta-percha. I replaced them, put over them a cap of gutta-percha, and secured them by ligature. The teeth when replaced had been out of the mouth about five hours. Three hours of that time they had been perfectly dry. I kept this ligature upon them till they were pretty firm. The operation was performed six months ago.

Three months ago the teeth were filled with gold. I saw the patient last Saturday, and the teeth were as firm and as good as any. I would ask how long a tooth can be out of the mouth and still retain its vitality."

March, 1883.—I noticed that the teeth were not only firm, but absolutely immovable. On tapping them with an instrument a ringing sound was given out like that heard on tapping a tooth of a continuous gum denture. There was evidently no soft tissue between the roots and the alveolar process. The peridental membrane had disappeared.

July, 1884.—The condition was the same as in 1883. The case was then lost sight of for a few years.

July, 1888.—I again saw the patient and found both teeth loose, the left one much more so than the right. It had elongated so that it extended nearly an eighth of an inch lower than its mate. It was so loose that the patient could move it back and forth with his tongue. It was so troublesome that he desired it removed and a substitute inserted on a plate. I suggested "implantation" and the patient consented. I use the word "implantation" because I could see from the peculiar movement of the tooth that the root was much shorter than when the tooth was replanted, and that the socket must be deepened before another tooth could be properly inserted.

September 11, 1888.—The left central incisor was extracted, but I was surprised at the amount of force required, considering its looseness. It could not be taken out with the fingers but required the forceps. The root was found reduced by absorption, or resorption, to less than half its original size and to about half its length. The surface was composed of bay-like excavations, some small, some large. The gutta-percha with which the pulp canal was filled was visible in some places. Upon examining the socket, no socket in the ordinary meaning of the word could be found. The walls were of soft and hard tissue, very irregular and apparently conforming closely to the irregularities and excavations in the root. The tooth had been evidently held in place mechanically by this close adaptation of the tissues. No "walls" as such could be found to the socket. Hard tissue of very irregular shape could be felt in different parts of the cavity, but no extended surface. The anterior plate of the process was wanting nearly the whole extent of the cavity.

The right central incisor, which was replanted at the same time, January, 1881, was in a much better condition. It had lost the absolutely fixed condition observed in 1883 and 1884, but was not very loose. It was firm enough to allow the insertion of a gold filling in its mesial surface, and this nearly eight years after replantation. Is replantation, then, a failure?

Upon passing an instrument under the edge of the gum, the sharp edge of the enamel could be felt. The root was evidently partly absorbed all around. No estimate could be made of its probable length.

As no suitable tooth could be found to replace the left central incisor which I had extracted, a Logan crown was attached to a suitable incisor root, by enlarging the canal and cementing the pin in it in the usual manner. After the cement was hard, a fissure bur was passed around between the end of the root and the neck of the crown. The groove thus formed was slightly enlarged at the bottom and filled with gold. A perfect joint was thus made between root and crown, so that the cement was entirely covered, and the possibility of its being dissolved prevented. The opening in the gum, which I could not call a socket, was deepened with the Younger trephine, and enlarged with the reamer. The instruments worked partly in soft and partly in hard tissue. When the new socket was large enough to fit the root, the walls were of hard and soft tissue irregularly distributed. The operation was not very painful. The new tooth was inserted in this cavity with some misgivings, for I had hoped to make a better socket, but could not for want of hard tissue. The tooth was ligated in place for four days, when the ligature was removed, and the patient went East.

June, 1889.—The patient presented himself for examination. The new tooth, replanted nearly a year ago, was absolutely immovable. It had assumed the same condition as its predecessor, showing that a considerable deposit of hard tissue had been made. No pain nor inconvenience had been experienced. The operation was a perfect success in every respect.

The right central incisor, which, a year before, I found somewhat loose, and which I expected to find loose enough for extraction by this time, was no looser than then; that is, was still in good condition eight years and a half after replantation.

Retarded growth of the alveolar process: When the teeth were knocked out and replanted, the patient being about nine years old, they were not fully erupted. The cervical margin of the enamel had not yet emerged from the gum tissue. There seems to have been no further eruption since that time. The growth of the intermaxillary bone, or, rather, of the alveolar process of the intermaxillary bone, was stopped at this age. This was evident from the relative position of incisors and cuspids, as I was enabled to watch them during these years.

When the centrals were replanted, they were about a sixteenth of an inch longer than the laterals, which had not fully erupted. The cuspids (temporary) were still shorter. In 1884, when the permanent cuspids had erupted to their normal position, the laterals were considerably shorter, and the centrals still shorter. The centrals had apparently not erupted any since replantation, and the eruption of the laterals had been considerably retarded.

When I decided upon grafting a crown to a new root for implantation, I hoped to use the crown of the loosened tooth, but found after its extraction that absorption had progressed so far upon the crown itself that it was too short for the purpose desired. Here, then, was an instance of the absorption, or resorption, of the three dental tissues, cementum, dentine and enamel.

To recapitulate, let me call attention to these points:

One replanted tooth lasted seven years and a half.

The other is still in good condition after eight years and a half of service.

Both teeth had been five hours out of the mouth before replantation.

They were perfectly dry three hours, and appeared the same as teeth out of the mouth an indefinite length of time.

Both teeth became immovably fixed in the alveolar process, giving out upon tapping, a sound of solidity never shown by teeth in a normal condition.

The peridental membrane had evidently disappeared. The union was evidently mechanical.

This same *solidity* is the condition assumed by *dry teeth implanted.*

The condition of these *transplanted* and *implanted* teeth was exactly the same.

The tooth implanted in an artificial socket made in partly hard and partly soft tissue irregularly distributed, became immovably fixed, the same as a tooth implanted in an artificial socket made in hard tissue alone.

A good explanation is that made by Prof. Guilford, that the dead peridental membrane serves the same purpose as the sponge graft, and that tissue growing from the sides of the socket uses this as a ladder to climb over to the hard tissue of the root, which it embraces at the same time that it penetrates its irregularities and thus holds it firmly; and that this peridental membrane disappears by absorption like the sponge graft, and thus leaves the hard tissues, process and root, in contact.

The fact that a tooth becomes immovably fixed gives no assurance that it will remain so during the life of the patient, since the same process of absorption and penetration may continue indefinitely till there is not root enough left to hold the crown firmly.

The fact that one *replanted* tooth, which had assumed the fixed condition of an implanted tooth, is still in good condition after eight years and a half of service allows us to predict a long and indefinite retention of an *implanted* tooth.

The fact that a new tooth, implanted after the loosening of a replanted one, became fixed, gives us an assurance that the operation may be repeated—perhaps several times.

The fact that an artificial crown can be attached to a natural root and a smooth and impenetrable joint made by filling gold between the two, extends indefinitely the usefulness of the operation of implantation, in as much as it limits it only by the number of artificial crowns in the market, and the number of roots that we can obtain.

PROCEEDINGS OF SOCIETIES.

NEBRASKA STATE DENTAL SOCIETY.

Reported for **THE DENTAL REVIEW** by C. N. Johnson, L. D. S., D. D. S.

(*Continued from page 459.*)

Dr. J. S. McCleery, of Beatrice, then read a paper on The Treatment of Pulpless Teeth. (See paper, page 505).

DISCUSSION.

Dr. H. C. Victor, Lincoln—I find it difficult to fill the roots with chloro-percha. I cannot pump it up successfully. The instrument passes through the gutta-percha and draws it away. I can fill more thoroughly with fibres of cotton saturated with some of the cements.

Dr. A. W. Nason, Omaha: I pump in chloro-percha, and fill with gutta-percha points in the ordinary way. In those portions of the cavity where I do not wish the chloro-percha to adhere, I use glycerine, and this prevents it.

Dr. Shriver: I am not favorable to chloro-percha. It is too liable to thicken before we get it into place. I use oxy-chloride of zinc, and insert a wooden point to force the cement into place. The wood and oxy-chloride of zinc gives us a good root filling.

Dr. McCleery: Wooden points are not desirable, from the fact that they sometimes pass through the end of the root and keep up a constant irritation. If gutta-percha does go beyond the apex, there is not much damage.

Dr. J. J. Willey, Wahoo: I can fill better with chloro-percha than in any other way. There are some canals I cannot fill with anything, but they are usually so small as to not cause trouble.

WEDNESDAY EVENING SESSION.

The report of the Committee on Mechanical Dentistry was read by the chairman, Dr. H. T. King, Fremont. (See paper, page 508.)

Dr. L. P. Haskell, Chicago, then gave a lecture on mechanical dentistry, of which the following is a synopsis: Students in our dental colleges do not receive the technical instruction they should in mechanical dentistry. This is owing partly to the pressure of other subjects during the course, and partly to the vast field to be covered in mechanical dentistry. There is not time to cover the subject thoroughly. The college course should be at least three years, and four would be better.

In the insertion of artificial teeth one of the most important points is to gain perfect articulation. This is often overlooked. There are more failures from faulty articulation than from any other cause.

Lower dentures are, from the very nature of the case, more difficult to manage than upper. In the latter we have a broad surface, and may rely on atmospheric pressure to retain the plate; but in the lower there is nothing but a narrow ridge, and the plate is easily moved by the action of the tongue and muscles.

More attention should be paid to restoring the contour of the upper lip, by carrying the plate high, and making the gum full over the cuspids, thus relieving the mouth of that common deformity arising from the extraction of cuspid teeth and the insertion of artificial dentures.

There is also another peculiarity of the upper jaw that is not to be overlooked. We always find more of a depression in the region of the cuspid on the left side than on the right, and it requires more fulness of artificial gum and greater length of tooth on that side to bring the teeth parallel with the upper lip. The cause for this depression, as given by Dr. Talbot, is that we chew from right to left, and the tendency is to crowd the teeth and alveolar process to the left, leaving a depression over the process. In these cases we usually find the left cuspid and first bicuspid of the lower jaw standing higher than those on the right, and sometimes it is necessary to grind them down to get the best results in articulation.

Thursday morning was devoted to clinics, a synopsis of the supervisor's report being as follows: Dr. W. W. Vance, of Kearney, adjusted a Logan crown on a right upper cuspid, using a gold band to encircle the root and crown. The operation was artistic and successful.——Dr. Shriver, of Glenwood, Iowa, completed a piece of bridge work in a case where the six anterior teeth were missing in the upper jaw. The space was somewhat narrow, so that five artificial teeth were used, and the piece was supported by capping the first bicuspid on each side. The patient (Dr. Roseman, of Fremont,) expressed himself as gratified with the change from a rubber plate, and the bridge certainly looked as if it would prove a permanent success.——Dr. S. H. King, Lincoln, filled a pulp canal in a right upper lateral. Chloro-percha was first pumped in, and then a hickory wood point used to fill the root. As the apical foramen was large, a small pledget of medicated cotton was introduced previous to filling, to prevent any of the material from being forced through. The wooden point is dipped in oil of cloves before its use.——Dr. Vance filled two large proximal cavities in upper bicuspids, demonstrating the Ladmore-Brunton matrix and clamp.——Dr. Whinnery, Omaha, injected, with good results, a local anæsthetic for the painless extraction of a molar. His formula is as follows: Cocaine 1 per cent, equal parts carbolic acid and glycerine, 1 per cent, menthol ½ per cent, making a 2½ per cent solution.——Dr. Nason, Omaha, filled a posterior proximal cavity in upper second molar with amalgam, demonstrating the Ivory clamp and Miller matrix.——Dr. Haskell, Chicago, constructed a partial upper gold plate, using pink rubber attachment in the absence of proper plate teeth for soldering.——Dr. King, Fremont, inserted a small artificial piece by capping a right first bicuspid, and attaching to it a lateral incisor, the cuspids being absent on both sides, and the space between the bicuspid and lateral on the left side having closed. There was room for only one tooth between the right bicuspid and central, which the artificial lateral filled to advantage, making a successful operation.——Dr. Johnson, Chicago, demonstrated the use of tin and gold in small grinding-surface cavities in children's teeth where we would otherwise use amalgam. Two cavities were filled, each in an upper second molar, right and left. The actual insertion of the filling took, in one case, one minute, in the other forty-five seconds, showing that the material may be inserted quite as quickly as amalgam.

Dr. A. S. Billings of Omaha, then read a paper on "Dental Fees." (See paper, page 505.)

DISCUSSION.

Dr. Keys, Kearney: This subject has been sadly neglected, but it is one of vital importance and comes nearer home to us than any other. I can scarcely suggest a remedy, but I think the public should be educated to an appreciation of our services so that we may claim better remuneration. It might be introduced more generally in our journals. The better the dentist is paid the better he is likely to do his work. We should never allow a set of teeth to leave our office without getting an equivalent for it, either the money or a note. And we should be paid for our time no matter what class of work we are doing, whether treating teeth, filling or examining them. Professional advice should be charged for, the same as legal advice from a lawyer. Another thing, members of a dental society should charge enough extra to pay their expenses at the meetings. We come to these meetings to gain knowledge and our patients reap the benefit and should pay for it. One reason why the dentist should charge well is because his time for making money is short. He must depend on the light, and his time of service is shorter than in any other profession.

Dr Funck: Agitation in the journals will scarcely accomplish anything. The men who cut prices and demoralize our fee system are the men who do not read the journals at all.

Dr. Cole: I think it is easier to maintain good fees in our small towns if there are two or three reputable practitioners than if there is but one. If the one man charges liberally the public believe themselves imposed upon through lack of competition.

Dr. Roseman : I want to condemn the practice of extracting teeth free of charge before inserting artificial teeth, also the gratuitous treating of teeth preparatory to filling.

Dr. Shriver : I think a good dentist will have no trouble in getting a fair price if he conducts his practice on proper principles. If he makes his patients respect him and his work there will be little controversy about the fees.

A paper on " Notes on Operative Dentistry Selected from Private Practice ", was read by Dr. W. W. Vance of Kearney. (See paper, page 497.)

DISCUSSION.

Dr. Johnson : The essayist said the first thing to be done after deciding to fill is to pass a piece of floss-silk between the teeth to search for sharp edges, and then to adjust the dam. He overlooked one very important point. In filling any proximal cavity the very first requisite is space. Without plenty of space we cannot work to advantage. This is often overlooked to the detriment of the filling. As to the kind of rubber dam, I am in favor of the heavy for several reasons. It is seldom necessary to tie heavy rubber on the teeth as it will stay of its own accord if properly adjusted. I find no difficulty in passing it between the teeth. The heaviest dam may be slipped between the most crowded teeth if a little soap is added to the dam on the side coming in contact with the teeth. Another advantage is that disks will not catch in heavy dam as they will in light or medium.

When the disks heat up in finishing a filling, add a little perfumed vaseline to the disk and it will, to a great degree, prevent this and will make it work more satisfactorily.

Dr. Stryker, Beatrice : One good point in the paper was when the essayist spoke of contouring, and advised the operator to keep the surface uneven to get a stronger filling.

At the evening session Dr. Johnston delivered a lecture on Operative Dentistry, after which the President read his annual address. (See paper, page 493.)

THE DENTAL REVIEW.

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THE CONGRESS AT PARIS.

The first International Dental Congress will assemble at Paris September 1, 1889. By the time this issue of THE DENTAL REVIEW reaches our readers in foreign lands, the convention of dentists from different portions of the world will have commenced its business, we trust, with the greatest harmony. We look forward with pleasurable anticipation to the work of the congress. The projectors have struggled hard to make it the success it should be, and we accord to them in advance our hearty good wishes. Dental sections in medical congresses have been eminently successful in numbers and in the excellence of the work accomplished, and that this congress may prove as enjoyable is our most earnest desire.

THE WORLD'S EXPOSITION, 1892.

From the activity in commercial circles in New York and Chicago, it appears that a world's fair will be held either in New York, Chicago or Washington. This is a settled fact. The mayors of New York and Chicago have each appointed committees of citizens to devise ways and means for the projected world's fair. Whichever city obtains the privilege is a matter of little moment to us; however, we would be pleased to have the fair in Chicago. It was in view of this fact that we first agitated the question of holding a second International Dental Congress in Chicago. If the first congress should decide, in view of the above fact, to authorize our representatives at Paris to arrange for a second congress, we will support it to the extent of our ability.

It may not be inappropriate, in this connection, to republish a letter which was published in the Chicago *Times* of February 16, 1882, written by the editor of THE DENTAL REVIEW when no ulterior motives could have prompted him to advocate such a measure :

A COLUMBUS CELEBRATION.

SUGGESTIONS BY A CORRESPONDENT THAT AN INTERNATIONAL EXHIBITION BE HELD IN CHICAGO IN 1892—THE FOUR HUNDREDTH ANNIVERSARY OF THE DISCOVERY OF AMERICA.

To the Editor : I wish to suggest the holding of an International Exhibition in Chicago in 1892, which will be the four-hundredth anniversary of the discovery of the new world by Columbus, and it seems that such an event might very appropriately be celebrated in this manner. The progress of the western continent, particularly, should be the leading feature of such an exposition, and Chicago, by 1892, will have a population of about one million, while the country west, north and south of us will have gained several millions, thus placing her near the population center of the United States, the situation of Chicago on the borders of a great lake furnishing transportation by water. The unequaled railroad facilities, and the coolness of the season from April or May to November, render it the most desirable spot on the continent to hold such a world's fair. The American people must have an event to celebrate before they can become enthusiastic in its support, and here is the event. The great artists and sculptors may produce their choicest works for such an exposition. Our agricultural, mechanical and scientific workers may be represented in such an endless variety of production, creation and discovery as shall be an education to the on-looker. It needs no argument to convince one of the value to a nation of world's fairs, when they do not come too often. By the time that 1892 shall roll around, we, on this side of the water, will need such an occasion to show our ancestors what the children of the new world are doing, and we cannot better do it in any other manner than by holding a world's fair, and it should be held in our own Chicago.

Respectfully yours, A. W. HARLAN.

The editors of dental journals may chew this cud of ancient history to their heart's content. We are for the congress of 1892.

FOREIGN CORRESPONDENCE.

LETTER FROM LONDON.

MALARIA AND ITS INFLUENCE ON EXPOSED PULPS AND PULPLESS TEETH.

To the Editor of the Dental Review:

DEAR SIR—When practicing in Ohio I noticed some phenomena in connection with the dental organs, of which I have seen no mention in our dental literature ; either through the modesty of others who may have noticed the same things failing to give the profession the benefit of their observations, or from an inability to fully appreciate causes that, speaking with regard to my own practice, have proven factors of no mean modifying influence as affecting many cases that presented themselves for my consideration.

Many years ago I realized the fact that the presence or absence of malaria modified in no small degree my treatment of congested pulps and true exposures of the pulp ; but most of all, were devitalized teeth susceptible to the influence of malaria, complications frequently arising which at times have taxed my resources to the utmost.

That this source of trouble was a real and distinct one, there is not a doubt in my mind, and that malaria in its typical and remote characteristics was responsible for many of the peculiar symptoms accompanying the aforesaid morbid conditions, I am equally sure.

Spring and autumn were the seasons in which these complications held high carnival—quite coincidental to the cycles of malarial energy—and the fact that quinine in modified or full doses exerted such a beneficial influence in controlling in the one case the congestion and local tension incidental to the fever stage, succeeding rigors, and in the case of peridental trouble modifying, and in many cases arresting pericemental inflammation, led me to rely very much upon this valuable remedy in treatment of cases of this description. A class of cases that seemed to cause the most trouble, and offer resistance to nearly all recognized methods of treatment were those where the pulp had died gradually from exposure, or where it had died from the result of a shock or violence to the tooth and its surroundings, and where no definite idea could be formed as to the period of its demise ; frequently after the greatest care had been exercised in cleaning out the canals and disinfection had been most thoroughly performed, the least approach to a tight dressing would promote inflammatory symptoms of an exalted type, which would pleasantly subside upon the removal of the dressing. Sometimes this would be followed with a slight sanious discharge, never approaching a degree of copiousness, but enough to hamper treatment and cause a recurrence of the local febrile symptom referred to. In these cases I found my greatest difficulties arise, and many times thought from the light of subsequent practice I had wasted much in treatment as well as valuable time.

Seeing that the usual treatment availed so little in these cases I resorted to what is now known as "immediate root filling," and if an abscess formed, as it sometimes did, I simply opened it thoroughly and treated it as an ordinary wound, this plan I found offered a number of advantages, viz: a saving in time both to patient and operator, as good, and frequently better results, combined with a localization of pathological conditions, should they arise, that rendered them specially amenable to treatment. I found this class of cases confined more particularly to three classes of patients, when in men they were of middle age and whose physical energies were more or less depressed—probably caused by susceptibility to the influence of malaria—and of an anæmic tendency; and in girls just attaining to puberty, and in women especially during gestation and lactation, the latter function in the anæmic patient exerting a marked influence in predisposing towards inflammatory processes any lesions of the dental tissues.

In boys these cases were conspicuous by their absence, which may be accounted for in many ways, viz: absence of sedentary occupation, absence of physiological changes incidental to the stage of puberty in the opposite sex, natural vigor born of outdoor exercise, etc., etc.

Since residing in England, where malaria is hardly known except by name, I have experienced none of the complications that frequently surrounded many of my cases in the United States, and would say, with the careful operator, the treatment of devitalized teeth here need not be a source of solicitude.

I should like to hear an expression of opinion from your numerous readers in Indiana and other places where malaria and its influences are frequently so marked, for I feel sure it would be an advantage to the profession to thoroughly ventilate and discuss a subject that has only just been touched upon here.

Yours truly, W. MITCHELL.

PRACTICAL NOTES.

MALPOSITION OF THE TEETH PRODUCED BY EXTRACTION AND TREATMENT FOR THE CORRECTION OF THE SAME.

BY E. L. TOWNSEND, D. D. S., LOS ANGELES, CALIFORNIA.

Miss S., aged thirty-nine, a native of Switzerland, came under my care for the relief of the protruded condition of the six superior anterior teeth. The lady claims that during girlhood her teeth were regular and stood in their normal position. The loss of the molar teeth caused the force of mastication to come on the lingual position of the incisors and cuspidati, acting as an inclined plane to drive them forward and outward, producing a very unsightly and disagreeable deformity as is shown in Fig. 1. The front teeth had become tender as she expressed it, and her meals were eaten with difficulty. The lower teeth had interlocked with the upper until they closed behind their normal articulation the fourth of an inch at least, as is shown in Fig. 2. The left central incisor had been devitalized and filled more than a dozen years ago by a Boston dentist, and the work was as perfect and intact as when finished. As would naturally be expected, the lady desired the teeth extracted and a plate inserted. After a deal of pursuasion, she consented to make the attempt of having the teeth drawn back to something like normal position.

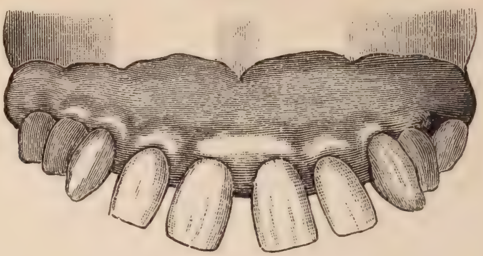

FIG. 1.

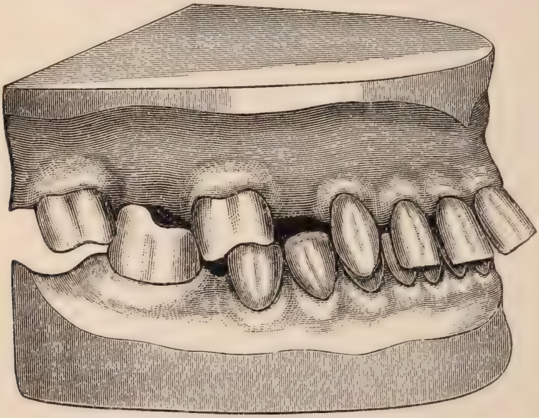

FIG. 2.

A block or bridge was made to cover the first and third molar on each side, each block consisting of four teeth, the three molars and one bicuspid, as is shown in Fig. 3, which opened the articulation

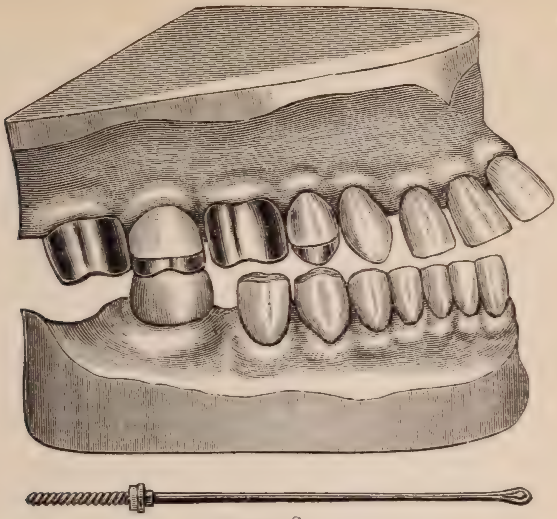

FIG. 3.

to about what I deemed normal; on one block a nut was soldered, and on the other a button. A gold strap was made to engage on one end with the button, and at the other a screw was fixed to pass

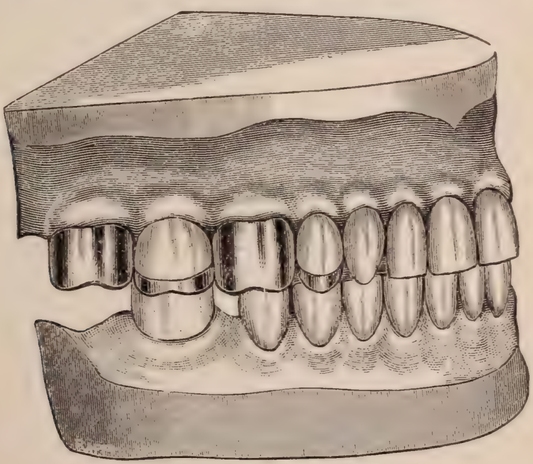

FIG. 4.

through the nut, so that when the screw was tightened pressure was exerted on all the anterior teeth, clips were placed over the ends of the central incisors, preventing the strap impinging on the gum. This arrangement was adopted because it affords an easy way to remove the band that it might be shortened from time to time, and also to serve as a retaining appliance when the operation should be completed. This was tightened twice a day until the teeth had traveled back to the position shown in Fig. 4, which was about four months. Owing to the age of the patient, I anticipated that it would take longer and be more painful than an ordinary regulating case, but it was not. I also feared trouble from the dead central incisor, but it acted precisely as did its neighbor, and to-day seems as firm as any of the six teeth acted upon. There being but one lower molar on each side, the extra pressure on that produced some shortening and allowed the teeth to form a better articulation than was expected. The operation has been completed something over a year. The lady wears the band at night, removing it during the day. There is no soreness, and the teeth show very little disposition to resume their former positions.

MEMORANDA.

There were ten or fifteen visitors at the Minnesota meeting.

Dr. W. O. Kulp, of Davenport, was at the Minnesota meeting.

The latest "fad" is chewing of grains of wheat to prevent gingival and cervical decay! Next.

The Ivory separator is quite a useful instrument, and well worth a place in every dentist's outfit.

Dr. C. S. Chittenden, of Hamilton, Canada, one of the best known dentists of the Province of Ontario, is deceased.

It has finally been decided to establish a section on Oral and Dental Surgery in connection with the International Medical Congress at Berlin, Germany.

The appointment of a critic for each operation, at the clinics of the Wisconsin State Dental Society is a good idea, and worth adopting by other societies.

Dr. Jenison uses the McGraw method of removing living pulps—cocaine-electrolysis, plunge in the brooch, remove the pulp, fill the root and cavity, same sitting.

Dr. G. V. I. Brown, of Duluth, is the new President of the Minnesota State Board of Dental Examiners. Dr. H. A. Knight, of Minneapolis, was re-elected Secretary.

We have it on good authority that the King of Italy has arranged to establish a dental school in Rome in connection with King's College of Medicine in the Eternal City.

During the fifty years of its existence, the Baltimore College of Dental Surgery has been attended by 2,624 students, of whom 1,427 have graduated from that institution.

Quite a number of the Milwaukee dentists are holding licenses from the International Tooth Crown Company, for which they have paid round sums. They are now talking of joining the Dental Protective Association, and saving money.

The Kitchi Gammi Club, of Duluth, occupies a very desirable residence on the bluff overlooking the harbor of Duluth. The members are spiritually and hospitably inclined. Dentists were particularly numerous in their broad parlors in July.

The Northwestern Dental Association will meet at Fargo, North Dakota, on Wednesday, August 21, 1889. The profession of North Dakota, the adjoining States and of the Dominion, are cordially invited to attend. A large attendance is expected.

Dr. Crouse did some good work for the Dental Protective Association at the meeting of the Wisconsin State Dental Society. The society endorsed the organization, and appointed a committee to aid in securing members and evidence for the Association.

Dr. Thomas E. Weeks, the late President of the Minnesota State Dental Association, did not waste any time in dispatching business at the annual meeting in Duluth. When the hour arrived for opening the meeting, he was on hand. Prosy speakers had no show, and the numbers on the programme came in regular order. A presiding officer who is prompt and incisive, encourages and gives an example to the members which is quickly felt, and we consider it a significant sign that they are ready to support such an officer with striking unanimity.

St. Paul, Minn., is rapidly assuming the airs of a metropolis. Her dentists are locating their offices in ten-story buildings; they own race horses, yachts (on paper), and one and all that we had the pleasure of meeting are full of open-handed hospitality.

At the semi-annual meeting of the Eastern Iowa Dental Association held in Waterloo, Iowa, L. K. Fullerton, of Waterloo, was elected President; C. A. Billings, Marshalltown, Vice President; E. L. Brooks, Vinton, Secretary; W. G. Clark, Cedar Rapids, Treasurer. The next meeting will be held at Marshalltown.

An opportunity presented itself recently to resort to a novel practice. After the removal of a few loose teeth, a lady desired to be immediately supplied with a set of teeth. Not having the time to make one at once, we inserted an old lower plate which had been laying around the office for some years. The grinding of a few teeth, and slight alterations, made it quite serviceable.

The list of officers of the Wisconsin State Dental Society for the ensuing year is as follows: President, E. F. Long, Black River Falls; First Vice President, C. P. Southwell, Milwaukee; Second Vice President, G. A. Sinclair, New London; Secretary, C. A. Southwell, Milwaukee; Treasurer, B. Douglas, Appleton. The next meeting of the society will he held in Appleton.

A filling that had been inserted nine years ago, was recently removed from a pulpless tooth by one of the REVIEW staff, and the pulp chamber found to be filled with cotton and iodoform. The cotton had a slight yellow tinge, a decided odor of the medicament, and a small amount of moisture was present, but the root canals were clean and peroxide of hydrogen showed no evidence of septic matter. The tooth had given no trouble to its possessor since the filling was inserted, and the sole reason for disturbing the amalgam was the dark color of the tooth substance. Evidently, this practical experience does not sustain the experiments of recent scientific investigation regarding the antiseptic properties of this drug.

Dr. Angle says that the "food-habit" of Americans results in the disease of teeth; consequently we have irregularly arranged teeth and other diseases. He does not believe that the mixture of races produces irregularity of the teeth and other diseases. Just what he means by "other diseases," we were unable to fathom when listening to his lecture on "Comparative Dental Anatomy."

"Maiden, with the meek brown eyes,
In whose orbs a shadow lies,
Like the dusk in evening skies;
If you'd keep the smile of youth,
Go and see how Doctor Booth
Can make an artificial tooth."—*Life.*

"When the leaves begin to turn," a few of the enthusiastic bridge-workers will feel a sorrow that does not now cast them down. It has been a privilege and pleasure to remove a *few* bridges with spoiled natural teeth, to which they were attached. Judicious bridge-work we are in favor of; but the miserable apologies that are made by the average dentist, who is not a good metal-worker, are a disgrace to the profession and are useless to the wearer. It is downright robbery to insert a bridge-piece when the operator knows it will not be serviceable for a longer period than a few months, or a year or two. A reform in this direction is needed which we hope to accomplish by frequent reference to it in these columns.

SOUTHERN DENTAL ASSOCIATION.

The Southern Dental Association will meet at Galveston, Texas, on August 20, 1889. An interesting programme has been prepared, and the profession generally is invited to attend the meeting. Galveston is a delightful and cool place in the hottest months of the summer.

NORTH CAROLINA STATE DENTAL ASSOCIATION,

The fifteenth annual meeting of the above association was held in Greensboro, June 25, 26 and 27. The attendance was the largest, and the proceedings the most interesting in the history of the society. The following officers were elected for the ensuing year: Sid. P. Hilliard, president; Will Conrad, first vice-president: George W. Whitsette, second vice-president; J. W. Hunter, treasurer; H. C. Herring, secretary, Concord, N. C.

CENTRAL ILLINOIS DENTAL SOCIETY.

To the Editor of the Dental Review:

DEAR SIR—Will you please announce that the eighth annual meeting of the Central Illinois Dental Society will be held in Peoria, October 8th and 9th, 1889? It is proposed to hold a meeting for organization at the National Hotel on the evening of Monday, October 7th. The regular sessions will begin promptly at 9 o'clock on Tuesday, October 8th, and nothing but strictly *dental business* will be allowed. All are invited to come. W. A. JOHNSTON, Secretary, Peoria, Ill.

DR. S. M. STURGISS.

The death of Dr. S. M. Sturgiss removes one of the best-known citizens of Quincy. He had resided here thirty-four years, and had achieved success financially and professionally. He was a long member of the Illinois State Dental Society, of which he had been President. A sturdy, self-made man of strong convictions, he took a prominent place in political and other public affairs, and became widely known in the political party with which he was affiliated. Strong in many ways, he was strongest in his domestic interests and attachments, and in an unusually affectionate home circle he was the idol of all. Surviving him are his widow and five children.—*Quincy paper.*

HAYDEN DENTAL SOCIETY, OF CHICAGO.

This society, named after Horace H. Hayden, was organized in "that part of the city of Chicago until recently known as the Town of Lake." It was organized for the social and professional improvement and benefit of its members. A Constitution and By-Laws were adopted. The meetings will be held monthly (except July and August), on the third Monday. The society is incorporated under the laws of Illinois. The following officers were elected: Louis Ottofy, president; A. W. Freeman, vice-president, and A. J. Oakley, secretary. Board of directors: J. W. Rogers, James L. Ubellar and H. P. Smith. Louis Ottofy was appointed a delegate to the American Dental Association, and A. W. Freeman, J. W. Rogers, James L. Ubellar and A. J. Oakley, were appointed delegates to the International Dental Congress, at Paris, France. A resolution inviting the International Dental Congress of 1892, as well as the World's Fair of that year, to be held in Chicago, was unanimously adopted. The committee on programme reported the following partial report for the first two meetings of the society: September 16—"Biography of Horace H. Hayden, and a History of Dentistry of His Time," by the president. "Treatment of Temporary Teeth," by Louis Ottofy. October 21—"Separating Teeth; How, When and Why? A. W. Freeman.

A. J. OAKLEY, *Secretary.*

The following circular letter has been issued:

THE CHAPIN A. HARRIS MEMORIAL ASSOCIATION,

The alumni of the Baltimore College of Dental Surgery have resolved to signalize the semi-centennial of this institution, by the erection of a memorial building to its founder, Dr. Chapin A. Harris. To this end a memorial association has been organized, the names of whose officers will be found at the end of this circular. At the first meeting of this association, an executive committee was appointed, charged with all the duties and powers of the association, in the intervals of meeting of the whole body, and instructed to appoint a board of trustees and sub-committees for each State in the Union and portions of Europe, together with a number of patrons, authorized to receive such gifts as the generous promptings of our citizens shall bestow. All this has now been done and we are happy to state that Mrs. C. E. Barrett Lennard, a daughter of Dr. Chapin A. Harris, is in entire accord with the enterprise, and has promised her assistance in our efforts to raise the necessary sum. The College faculty has subscribed six thousand dollars as a nucleus, we therefore now make this appeal to the graduates of the school everywhere to assist us in this enterprise; surely no alumnus of the school, who has any love for his alma mater, or proper appreciation of the memory of Chapin A. Harris, the founder of this College and the father of Professional Dentistry, can refuse to aid in the matter, and do all in his power to place the old Baltimore College of Dental Surgery on such a basis as will insure its existence for all time.

For the encouragement of the officers and members of this association, it is desired that subscribers report to the Secretary the amount they are willing to contribute. Hoping for an early response, I am

With much respect, etc.,

926 Madison Avenue, Baltimore, Md. B. HOLLY SMITH, M.D., D.D. S.

Officers—President, Dr. W. W. Walker, N. Y.; First Vice President, Dr. J. Ten Eyck, D. C.; Second Vice Vresident, Dr. C. T. Brockett, Ga.; Treasurer, Dr. T. S. Waters, Md.; Secretary, Dr. B. Holly Smith, Md.

Executive Committee—Chairman, Dr. D. F. Penington, Md.; Dr. Bernard Myer, Md.; Dr. W. B. Finney, Md.; Dr. M. W. Foster, Md.; Dr. R. B. Winder, Md.; Dr. T. S. Latimer, Md.; Dr. Albert Price, Md.; Dr. W. G. Foster, Md.

DEPARTMENT OF THE INTERIOR.—CENSUS OFFICE.

To the Medical Profession: WASHINGTON, D. C., May 1, 1889,

The various medical associations and the medical profession will be glad to learn that Dr. JOHN S. BILLINGS, Surgeon U. S. Army, has consented to take charge of the Report on the Mortality and Vital Statistics of the United States as returned by the Eleventh Census.

As the United States has no system of registration of vital statistics, such as is relied upon by other civilized nations for the purpose of ascertaining the actual movement of population, our census affords the only opportunity of obtaining near an approximate estimate of the birth and death rates of much the larger part of the country, which is entirely unprovided with any satisfactory system of State and municipal registration.

In view of this, the Census Office, during the month of May this year, will issue to the medical profession throughout the country "Physician's Registers" for the purpose of obtaining more accurate returns of deaths than it is possible for the enumerators to make. It is earnestly hoped that physicians in every part of the country will co-operate with the Census Office in this important work. The record should be kept from June 1, 1889, to May 31, 1890. Nearly 26,000 of these registration books were filled up and returned to the office in 1880, and nearly all of them used for statistical purposes. It is hoped that double this number will be obtained for the Eleventh Census.

Physicians not receiving Registers can obtain them by sending their names and addresses to the Census Office, and, with the Register, an official envelope which requires no stamp will be provided for their return to Washington.

If all medical and surgical practitioners throughout the country will lend their aid, the mortality and vital statistics of the Eleventh Census will be more comprehensive and complete than they have ever been. Every physician should take a personal pride in having this report as full and accurate as it is possible to make it.

It is hereby promised that all information obtained through this source shall be held strictly confidential.

ROBERT P. PORTER, *Superintendent of Census.*

NOTICE TO BINDERS.

In arranging the pages of this volume omit from August number pages 533-540, and from November number pages 735-739.

To the Edi

Dear S merican Dental
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Whereas, instruments and
materials have formed a combination known to the profession as the Dental Trade Association; and

Whereas, The forming of such combination can only be an obstacle, retarding progress in the direction of scientific investigation, improvement and higher professional attainment; therefore

Resolved, That we consider the forming of such combination to be a reflection on the scientific and professional character of our profession.

Resolved, That we invite all members of said combination to withdraw from the same, and we pledge them our hearty interest and support.

It is not easy to understand how the formation or the continuance of an association of merchants and manufacturers can retard "scientific investigation," interfere with "higher professional attainments," or "be a reflection on the scientific and professional character" of a profession. The resolutions were evidently prepared by one whose zeal was not tempered by knowledge, in an attempt to attack those who had no opportunity of defense or reply, and were adopted, without consideration, by those who fancied they had a grievance, without the ability to state its precise character. Most of the attacks that have been made upon the association have been similarly vague and meaningless, and similarly calculated to impress the unprejudiced that any lack of a true scientific and professional character in their authors had other explanation than the existence of a trade association, and must have antedated its organization.

The Association at this its first annual meeting since the publication of the quoted resolutions, and other like attacks, deems it fitting to present in reply a brief account of its organization and objects.

The American Dental Trade Association was organized between seven and eight years ago. Its germ originated during a dental convention at a meeting without preconcert, of five dealers, who were at that time in the habit of canvassing to some extent the same territory. The business in that section had been for some years in a most unsatisfactory condition. The original idea was limited to the suggestion of a local organization or Board of Trade, for the purpose of arriving at a better understanding among themselves. The subject however broadened, and it was finally decided to invite all dental dealers and manufacturers to unite in a Trade Association. After considerable discussion a plan of organizatian was matured and at a meeting held at Niagara Falls in June, 1882, the Association was formed. It now numbers, about seventy-five members, including most of the leading manufacturers and dealers in the trade.

Previous to this there had been very little harmony or kindly feeling among those engaged in the business. Although in active competition, most of them were strangers to each other; there were jealousies and supicions which led to doubtful dealing. There was likewise a time when there were no dental societies; when each man was working solely for himself, perhaps jealous of his brother practitioner, and unwilling to aid him professionally. All dentists now know the value of association, of a code of ethics, and of occasional meetings for discussions and friendly intercourse.

In almost every branch of business there are associations and Boards of Trade for the establishment of commercial ethics, applicable to their specialty, and for the cultivation of kindly feeling. The general sentiment of the community is that such associations are desirable, and that their effect is beneficial. It remains for a few dentists to deny to those with whom they have their principal dealings that which they highly value for themselves, and which is freely accorded by the whole community to other branches of mercantile business.

The objects of the Dental Trade Association are set forth in the second article as follows:

"The objects of this association are to reform abuses; to secure unity of action; to promote a friendly intercourse between its members; to avoid and adjust, as far as practicable, differences and misunderstandings between them, and, generally, to advance the interests of the trade in dental goods in the United States."

Allusion has been made above to the inharmony which existed, and to some of the abuses which obtained between the members before their association, and which it was desirable to remove. The chief abuse which had grown up in the dealings of the members with the dental profession was discrimination of the rankest kind. It required the authority of the United States Government to put a stop to unjust discriminations of the transportation companies of the country, and the Inter-state Law has been everywhere approved as a long step in the right direction. The American Dental Trade Association undertook, of its own motion to put a stop to discriminations in their own line of business, and to place all who dealt with its members upon the same plane of honorable and equitable treatment. Before that time there were, as there are now, regular list prices for goods, and the theory was that there were no discounts allowed from these prices, except in the case of a few articles which were charged at a lower rate when certain quantites were bought at one time. In practice this theory of no discounts was enforced at least nine times out of ten. The exceptions were when two or more eager salesmen were bidding against each other for the sale of a chair, an outfit or large lot of goods, when oftentimes prices were accepted that left the dealer little or no profit. One case is on record where three dealers were bidding against each other for the sale of a chair, and the unfortunate one who finally made the sale, sold the chair at precisely what he paid for it, and lost the freight from the factory to his store in the west. The correct theory of honorable mercantile dealing is that both parties shall be benefited by it, and although every one likes to buy as cheaply as cheaply as possible, it is not believed that any fair minded dentist would feel comfortable in the belief that circumstances were compelling his dealer to serve him without profit, any more than he would feel satisfied to accept a fee from a patient without having rendered him beneficial service.

The unjust discrimination is apparent from the fact that the very next customer for a chair who presented himself, would have been charged full list price without any discount whatever, if he went to the dealer confidingly, and other dealers could be kept from knowing his want. It was the large majority of confiding buyers, who simply sent their orders without question, who were discriminated against, while comparatively few were favored with discounts. The Association corrected this by establishing list prices for time sales, and allowing what had never been generally done before, a discount for prompt cash or five per cent on bills of $50 and over, and ten per cent on bills of $150, on all goods except precious metals and such as were sold at a rebate for quantity; as teeth in lots. These discounts are now allowed to every one that pays cash. There sult is that the dentists, as a body, pay less for their supplies, on the same list price, than they did under the former system of discriminations in favor of a few, and the business is placed on an honorable, dignified basis.

Neither at the formation of the Association, nor at any time since has there been the price of a single article advanced because of its operations. On the contrary a comparison of the rates of to-day with those prevailing eight years ago will show many, and in some instances large, reductions. Further, these reductions have almost all been brought about by competition inside the Association. All the talk about "combination," "dental trust," "pool," etc., as affecting prices, is absolutely baseless. There is but one rule of the Association that bears at all upon prices. Manufacturers, who are in almost every instance retailers as well, fix the retail prices of their own goods, as they always did, but the members who handle those goods agree to abide by the manufacturers' prices, which formerly they did not always do. In other words the manufacturers permit the dealers all over the country to make a profit on the sale of their productions, at their prices, on the simple agreement that they shall not be undersold on their own goods. But the manufacturer can change his prices whenever he chooses, without let or hindrance, the only stipulation being that he will notify those who are dealing in his goods, that they may conform to the changes. Furthermore, in the case of two or more manufacturers making the same grade of goods, each is free to make his own rates, without any reference to the others. Thus the White Co. and Mr. Justi have at present the same list of prices for teeth, but each house can change its rates at will, without consultation with the other, or with any one in the Association.

Competition is also unrestricted; there is in no sense any pooling of interests, any limitation of production. Each member of the Association pushes his business "for all there is in it," just as though no Association was ever thought of. It could not be held together for a week on any other basis. It has been held together all these years on this foundation, by a better acquaintance with each other than formerly, by mutual respect and friendly intercourse, by honorable dealings with each other, and by obsolute non-discrimination.

Can any fair-minded man, after the above candid statement of facts, find any ground for condemning the association? Must it not be admitted that it has placed the business on a better foundation and on a more honorable plane than it ever before occupied? That it has operated and will continue to operate to the benefit of the dental profession, is our profound conviction.

It must be conceded that it was a benefit to the profession to do away with discriminations; and the association has been of positive advantage to the very large number of dentists that are remote from the manufacturers and larger dealers, by encouraging their local dealers and enabling them to carry a larger stock to meet current, every-day wants.

It would be a step backward to return to the condition of the trade that existed in certain sections of the country eight or ten years ago. If the association should be broken up, it would not eventually benefit the profession, and it would not be the larger dealers and manufacturers who would chiefly suffer by it. Instead of being close monopolists, as has so often seen charged, the larger manufacturers have to a certain extent allowed their hands to be tied by the association for the benefit of the general trade, and particularly of the smaller local dealers all over the country. Who does not realize that in any general scramble for business, regardless of whoever stood in the way, the greater capital and facilities of the large houses would speedily overcome the smaller ones, and thus give to the former, in the end, a much greater opportunity of "monopolizing" than is possible under the present system. With this statement of its objects and methods, the American Dental Trade Association confidently appeals to the good sense of the dentists of the country for an unprejudiced acceptance of its well-meant efforts to help and not hinder the advancement of dental science and art, while seeking to establish and maintain a code of business ethics, as essential in its field as is the professional code of professional men.

THE AMERICAN DENTAL TRADE ASSOCIATION.
R. T. Morrison, President.
LEE S. SMITH, *Secretary.*
NEW YORK, June 20, 1889.

SPECIALTIES IN DENTISTRY AND THEIR RELATIVE IMPORTANCE.

It may not be possible to exactly define the dividing lines between the different departments of Dentistry, but there are some specialties in the practice which are so obvious as to be readily recognized.

It will not be disputed that the preservation of the natural teeth is the most important work of the dental surgeon, and the course of instruction in the Dental Colleges, and the essays and discussions in society meetings are evidence that the profession is fully awake to this fact.

Since the opening of the first Dental College in Baltimore, progress has been rapid, and it has been a rapidly accelerated movement; the last quarter of that period having shown immense strides in thoroughness of investigation and practical application of newly discovered truths.

These investigations have taken a far wider range than would have been deemed possible to the founders of that institution. Many old theories have been put aside as untenable, and new remedies and methods in practice founded on broader knowledge, have been adopted.

Step by step with the increasing knowledge of diseased conditions, has been the search for and production of proper remedies, and these advances in knowledge and practice have enabled the dentist in a great many cases to substitute cure for extirpation—to save rather than destroy.

Next in importance to the saving of natural organs is supplying their loss with artificial substitutes.

The first specialty we considered is the work of the surgeon, the second is the work of the artist; but in order to do this work successfully the dental artist must have an intimate acquaintance with the natural teeth and their relation to the features and particular characteristics of the individual.

It is not enough that he should be able to make and arrange a set of teeth that will look beautiful in a showcase—he must be prepared to meet every variety, and to adapt his work to the peculiarities of every case.

This specialty of substituting artificial teeth for the lost natural ones has been subdivided, and two artists, of necessity, work together to accomplish the best results.

The dentist must be able to obtain from some source such artificial substitutes as he may need, and experience has proved that it is better that one should devote his time and ability to making a great variety from which the other may select, than for each to undertake to do the whole for every case.

While the variety in form and color required is almost endless, this variation is always in relation to, and limited by, the variations in the human countenance.

This involves the need of a careful study and preparation similar to that of the sculptor and painter; without it the product will be stiff, mechanical and unexpressive—a monument of failure.

The second subdivision of the work comes into the hands of the operative dentist. He, too, must be an artist with the ability to select for each particular case from the stock provided, such as will meet every requirement of color, form, size and arrangement.

Just here is where the ability of the dentist is put to the test. If he lacks this talent, success or failure will be a matter of accident as far as he is concerned; but with it, and the product of the artist manufacturer to select from, there should be no failures.

In closing I would say that, without desiring to detract from the merits of others, I think no one could look over the immense variety of artificial teeth in the store and factory of H. D. JUSTI, without feeling that here was a work of true artistic merit, and that the subdivision of labor has enabled the truly accomplished dentist to reach a higher success than would have been possible had he attempted the whole work in his own laboratory.

The study of form and color here exhibited leaves little to be desired. It would appear that a special study of an immense number of cases must have been made by Mr. JUSTI, to enable him to meet not only the ordinary forms, but almost every variation or eccentricity in the arrangement of the dental arch.

VERITAS.

THE

DENTAL REVIEW.

Vol. III. CHICAGO, SEPTEMBER 15, 1889. No. 9.

ORIGINAL COMMUNICATIONS.

Chloride of Methyl.

By M. L. Rhein, M.D., D.D.S., New York, N. Y.

The dental profession has long been in search of some practical means of alleviating the intense suffering which is often inflicted upon patients while preparing teeth for filling. We have now at our disposal numerous medicaments, each of which has its advocates. Creosote, carbolic acid, potassa, glycerine, cocaine, chloride of zinc, and various other therapeutic agents and combinations of remedies, are in daily use to accomplish this purpose. Some advocate the use of the sharpest and swiftest revolving burs; others of intense heat; and again others of extreme cold. All these agents have obtained their reputation by producing a more or less complete stage of anæsthesia of the terminal ends of the nerve fibrillæ, the results varying in different individuals and under different conditions and surroundings.

When we consider the density of the dentinal structure, the shortness of the period that a therapeutic agent remains in contact with the dentine, and the rapidity of the return of sensibility to the parts; we are forced to the conclusion that but rarely is there any absorption of a remedy, and consequently no persistent benefit is derived from it. The vain efforts of so many to procure good results by the use of cocaine alone, and the frequent success when this remedy is combined with others, is well known to all. If no distinctively therapeutic benefit is gained from these remedies, how then do they so often produce the desired results? The only reasonable conclusion is that local anæsthesia of the dentine as obtained at the present time, under any known process, is the result of counter-irritation.

Of all the counter-irritants, extreme heat and cold are certainly the most effective. The late revival of the use of the various ethers in the form of spray, for the production of intense cold, indicates that this method of obtunding sensibility is held in esteem by a portion of the profession. Although very successful in the application of the ether spray, I was deeply chagrined by the numerous disadvantages attending its use, chiefly the length of time required to produce the desired intensity of cold, and the consequent unpleasantness resulting from the volatilization of so much ether.

About this time, while attending to the teeth of Dr. G.W. Jacoby, President of the New York Neurological Society, I employed hydrochlorate of cocaine to produce the desired anæsthesia in the removal of some gum tissue which overlapped a third molar. This led to a conversation about local anæsthesia, and I learned that he had obtained remarkable success in the treatment of sciatica and all forms of neuralgia by the use of intense cold produced by chloride of methyl, and he referred me to an article by himself, entitled "Treatment of Neuralgias by Means of Intense Cold."

Chloride of Methyl was discovered in 1834. Its production was at first too complicated and expensive to admit of its general use. It was made by heating a mixture of sulphuric acid, methylic alcohol and sea salt. A very cheap process has been invented by C. Vincent, of France, and all the Chloride of Methyl used in that country is manufactured near Paris under his patent. He takes the remnants of beets used in the manufacture of sugar, and extracts from these the chlorate of tri-methylamine, which being subjected to a sufficient degree of heat produces the Chloride of Methyl.

At ordinary temperature this is a colorless gas of slightly etherous odor and sweetish taste. It boils at 23° C. Above this temperature it can be kept in a liquid state only by keeping it under high pressure in very strong air tight vessels. When relieved from pressure it returns at once to a gaseous state, producing a reduction of temperature from —23° C. to as low as —40° C.

Malassez and Ranvier have for some years employed this principle of artificial refrigeration for freezing histological specimens. The commercial value of Chloride of Methyl consists principally in its use for the extraction of perfume.

Débove is entitled to the credit of having first used Chloride of Methyl medicinally. The first patient on whom he used it had been suffering from a severe attack of sciatica for the cure of which various treatments had been employed in vain. Of this case Débove writes as follows: "I passed the jet of Chloride of Methyl over the entire painful service, from the hip to the external malleolus. A minute later the patient, who until then could not put his foot to the ground, walked around the ward without limping." Up to 1885 he had used the Chloride of Methyl in over one hundred cases. Since then numerous successful results have been published mainly by French physicians. In 1884 R. D. Santelli published the results of thirty successful cases treated by this means. Dr. Olive, of Nantez, describes four successful cases.

Before various meetings of the Société Médicale des Hospitaux various successful experiences with this remedy were detailed by Rendu, Bucquoy, Sevestre, Legroux, Tenesson, and F. Rouillon, of whom the last detailed five cases of trigeminal neuralgia of from three months to fifteen years' duration, in two of which both nerve-stretching and re-section had been performed unsuccessfully. Four of these cases were cured and one relieved.

A. Peyronnet de Lafonvielle writes of eight cases of trigeminal neuralgia of long duration which were relieved after several applications. In the article by Dr. G. W. Jacoby on this subject, previously referred to, he mentions five cases of tri-geminal neuralgia treated by this method. He says: "In all five cases the pain was entirely relieved after the first application. In one of the fresh cases there was no return of the pain. In two others the pain returned and a second application was made, with the result of relieving the pain again. In these also there has been no return. One of the old cases was so much ameliorated after four applications that he discontinued treatment, although not entirely well. In the fifth case I was able to obtain relief after each application and although six applications were made, there is no sign of permanent improvement. My general impression from this brief experience is, that we have in the Chloride of Methyl a reliable analgesic, which does not effect the general condition of the patient, and that it is invaluable in the treatment of neuralgias for the immediate relief of severe pain."

In the first successful experiments, the substance was placed in an ordinary thick glass syphon, provided with an attachment piece by means of which a fine spray could be produced. Numerous explosions of these syphons caused their abandonment. The apparatus as at present constructed consists of a copper cylinder having the capacity of about one litre. Above the cylinder is a strong screw which when fastened down prevents the escape of the methyl. When this screw is loosened the fluid escapes through a lateral opening into a smaller brass tube through the mouth of which it comes in the form of a fine spray which can be regulated in the most delicate manner by means of a micrometer screw. The brass adjustment is not well calculated for reaching the distal aspects of the posterior teeth, but does very well for other surfaces. I have designed for these posterior surfaces a special attachment which overcomes this difficulty. There are three methods of application, as follows: first, the direct application of the spray. Second, the glycerine method of Bardet. The part being first covered with glycerine the spray is directed against it, and the frozen glycerine is supposed to produce a more intense degree of cold. Third, the "stypage method" of Dr. Bailly, which consists in making a tampon of prepared cotton which ought to be enveloped in fine silk; (the cotton can be covered with glycerine if desired), and while being held with a pair of dressing forceps, deluged with spray and then immediately pressed against the painful point. The intensity of cold obtained by this method depends upon the amount of pressure with which it is applied against the surface, and it is supposed will produce a more intense cold than either of the other methods. It requires, however, too large a tampon to make it practicable in average sized cavities of teeth. This is the method, however, which seems to produce the best results in the various forms of facial neuralgia. I have also found it invaluable for producing relief and curing incipient pulpitis by means of the intense degree of counter irritation which it produces. The tampon should always be pressed against the point where the seat of the pain is located, but care must be taken not to hold it too long in position, as there is danger of its producing a blister or eschar; with a little care this can always be avoided. The tissue becomes pale and hard following the application and there is a momentary burning sensation followed by an immediate relief from pain. In numerous cases the pain returns again and often it requires three or four successive applications to obtain a permanent cure. There are, however, forms of deep seated neuralgia, which while they are temporarily relieved, occur again at intervals. Jacoby's explanation is, that when the neuralgia is situated in the nervi nervorum (as it most generally is) the severe cold entirely destroys or at any rate completely paralyzes these nerve filaments, but when the seat of pain is in the nerve fiber itself, being not so accessible, the pain returns.

My first experience with the chloride of methyl occurred in February last. Mr. M., a professional vocalist, was sent to me for relief from severe neuralgic pain. A dentist in extracting the right inferior third molar had removed all of the process and a sufficient amount of the maxilla to expose a portion of the inferior dental nerve ; cocaine produced a short respite ; but the patient returned soon after with a recurrence of the pain and an agonizing appeal for something to be done for his relief so that he would be enabled to sing that evening. In my dilemma I thought of the chloride of methyl, and having sent for Dr. Jacoby's cylinder I used a tampon which resulted in an entire dissipation of the patient's suffering.

Early in March I procured from McKesson & Robbins a cylinder filled with chloride of methyl which they import from Paris, and determined to keep a record of my observations. I will detail a few of the most interesting cases:

March 5, Mrs. L. presented herself to have the posterior approximate and crown surfaces of the left superior second bicuspid and the anterior approximate and crown surfaces of the left superior first molar filled. Within the past two or three weeks she had a number of cavities filled without much pain. She was not of the nervous class that suffers from the slightest touch of an instrument. The excavation of these cavities proved to be excruciatingly painful ; they were deep but did not reach the pulp. The rubber dam having being applied and the cavities dried, the cylinder of methyl being held in the left hand and the screw having been loosened, the nozzle was pointed as near the cavity as possible and with the right hand the micrometer screw was opened for about fifteen seconds. After this application the cavities were thoroughly prepared by means of large engine burs and hand instruments without causing the slightest pain ; the patient complained of a momentary sensation when the spray first struck the tooth's surface, but was delighted with the result. No bad effects have been noticed up to the present time, and on July 10th, it was found that the tooth responded perfectly to the cold and heat, showing that the pulp had not been injured.

March 18, Mrs. K. had a large cavity in the left inferior second molar to be filled; she was of that intense nervous temperament, that dreads every movement the operator makes. Her teeth had been under my charge for the past eight years, and I knew by bitter experience that operating for her was alike agonizing to dentist as well as patient. She was very skeptical, and my first application of the spray to the tooth was not very effective. This I believe was due to using an insufficient amount of methyl. A second application produced complete local anæsthesia.

March 21st. Mr. P., aged eighteen, a very nervous young man, and difficult to operate for; the right superior second bicuspid had a small cavity on the posterior approximate surface which was very sensitive. The application of the chloride of methyl produced complete local anæsthesia which lasted about two and a half minutes. It required two applications to prepare the cavity.

April 3d. Miss C. presented herself suffering with a toothache so severe as to cause an intense neuralgic headache. The second superior right molar had a large cavity reaching almost to the pulp; it was excruciatingly sensitive to the touch; the application of the methyl produced a momentary degree of pain which was very intense, but in turn this was followed by complete local anæsthesia and an immediate disappearance of the headache. Sensation returned before the cavity was entirely prepared, and a second application was required to complete the operation. A temporary oxyphosphate filling was inserted, and there was no recurrence of pain.

April 19. Miss S. had cavities on the anterior approximate surface of the second right superior bicuspid and the posterior approximate surface of the first right superior bicuspid. They were acutely sensitive to the touch, but an application of the methyl produced complete local anæsthesia and a temporary stopping of gutta-percha was inserted. On May 6th, after removing the stopping, the cavities were found to be so acutely sensitive that another application was made, the result being that gold fillings were inserted without the patient having any appreciable sensation of the operation.

April 22d. Miss F., of nervous temperament, had a cavity on the posterior approximate surface of the second inferior left molar;

it was impossible to obtain direct access to the cavity with the nozzle of the spray apparatus, as then constructed, but an application was made as well as possible. It seemed only to increase the pain, and a second and third application produced no better result. The patient endured the pain, and had the cavity filled, but complained of intense suffering from the tooth during the following two nights, when the pain disappeared. On recent examination the pulp was found to respond perfectly to heat and cold.

April 26th. Mrs. F. had filled with copper amalgam on the day previous a cavity on the posterior approximate surface of the second superior left molar. The cavity was very deep, reaching under the gum, and though very sensitive no application was made on account of its inaccessibility. She had suffered all night with pain from the offending tooth, and there were present all the symptoms of incipient pulpitis. A tampon of cotton having been covered with glycerine and thoroughly saturated with chloride of methyl, was pressed firmly on the gum at a point where the apices of the buccal roots were supposed to be; immediate relief ensued. In about five minutes pain returned and again disappeared after another application. After longer intervals there was a recurrence of a lesser amount of pain, but after the fourth application the pain disappeared not to return.

April 27th. Miss S. had the first inferior right molar filled with copper amalgam six months previously. It was very painful at the time, and has always remained sensitive to cold and heat, which symptoms have increased in severity during the past week so markedly as to indicate approaching death of the pulp. After applying the rubber dam, the tooth was thoroughly saturated with the methyl spray, which produced immediate relief from all pain. With a recurrence of pain, four separate applications were made, after which the rubber dam was removed. The patient experienced complete relief for about twenty minutes, when, according to her statement, the pain returned in a more intense form than had yet been experienced, and seemed proof against all counter-irritant treatment. An opening was then made through the filling into the pulp chamber, and the pulp removed.

The above detailed descriptions will give an idea of the average results obtained. Out of seventy-six cases, four alone were found to be proof against the action of the methyl, and two of these are believed to have been due to the inaccessibility of the cavities.

In conclusion, it is believed that, in the chloride of methyl, will be found a valuable addition to our therapeutic armamentarium. It appears to be the most reliable local anæsthetic yet introduced for preparing teeth for filling, though it is advised not to use it in a cavity near the pulp. It is wonderfully effective in affording immediate relief in all forms of neuralgia, and permanent cure in a majority of cases. Lastly, it has been found to be remarkably potent in the cure of incipient pulpitis, and though its application is always more or less painful, it seems to be generally preferred by patients to the pain from which they have been suffering.

PRESIDENT'S ADDRESS, MINNESOTA STATE DENTAL ASSOCIATION.

BY T. E. WEEKS, D. D. S., MINNEAPOLIS, MINN.

Fellow Members of the Minnesota State Dental Association, and Gentlemen: In fulfilling the time-honored custom of presenting an address from the chair, I shall take the liberty of offering a few thoughts upon a subject of pertinent interest to every dentist, viz.: education, dividing my subject by considering, first, the college, next the society, and finally individual improvement, prefacing by a glance at dentistry itself. What is it, a trade or a profession? I hear the answer, prompt and clear—a profession, of course. But do the rank and file, in their practice and in their daily lives, fulfill the requirements of professional gentlemen? I shall not, in this connection, discuss the question as to whether dentistry is a specialty in medicine or not, but endeavor to establish the definition of a profession.

As Prof. Merriam, in his address before the New York Odontological Society, expresses himself so aptly, I take the liberty to quote from it. He quotes Rev. Edward Everett Hale where he said:

"Every diploma given in a liberal profession contained three pledges, which those who received them bound themselves to maintain by accepting—a pledge to learn for all; a pledge to practice for all, and a pledge to teach freely to all. The obligation to learn and teach brings to the front the position of Doctor or *teacher*."

And again he says: "Mr. Ruskin asks, in one of his essays, why it is that the clergyman, the lawyer, the physician, the army or navy officer, receives more honor, or holds a higher position in the opinion of the world than does the merchant, in proportion to the time spent in acquiring the essential knowledge?" And he answers it by saying that the world has wrongly accepted the merchant at his own estimate; that he works for money, and may decide without loss of prestige always in favor of those transactions that pay him best; whereas, in the professions, the world recognizes that each must often turn from that which pays him best to that which is the most dangerous or the least profitable. The lawyer may become a judge, and must refuse bribes, or sit in cases in which he has a personal interest, or take advantage of knowledge in a pecuniary way which has come to him while hearing cases. The clergyman who neglects the care of souls, or to teach truth for more profitable work, or who preaches error or falsehood if it pays best; the physician who would not face contagion; the army or navy officer who would not risk his life, or who would retire on the eve of battle for the sake of money, are all without honor."

I leave the question with you to answer, whether the majority of dentists, in their lives and practices, follow most closely the practices of the merchant and tradesman, or those of the clergyman, physician or lawyer. What is the reason that we drop so readily into the trade idea? It may be fairly urged that dentistry is as much or more mechanical than scientific; but this alone will not explain it; we must look for the greater part of the fault in the education of the dentist. At this point I regret, for the moment, my connection with an educational institution; but when I assure you that the views expressed are those I have long held in the rough, being only crystallized by my contact with students, and remind you that my position involves no pecuniary interest, I shall be free from any suspicion of interested motives, and I do not intend my remarks to particularize as against any established institution, but to be considered in a general way.

To commence at the foundation, then, the profession at large, and most colleges, are not sufficiently careful as to the qualifications of students, not only as concerns their literary attainments, but mechanical ability and manual dexterity as well. A very limited observation in the lecture rooms, infirmaries and laboratories of our colleges will reveal the presence of a very large percentage of young men lacking in preliminary education or mechanical ability, and sometimes both. Is this because the faculty do not recognize the necessity for these things, or because the colleges are private enterprises, run for the pecuniary profit of the stockholders, and must not be too critical as to their matriculants, or the college in the neighboring town will take these applicants in, and by the standards by which these colleges are too often measured (*i. e.*, the number of attendants and graduates) will outstrip them?

In conversation with the different members of the profession the first question asked in an inquiry about the college is almost invariably, "How many students have you?" Here, then, is one great fault in education. It seems to me that on this point, at least, a combination among the colleges would be very beneficial; failing in this, we as individuals should favor those colleges whose entrance requirements are the highest, thus aiding in creating a sentiment in their favor. Then in our offices when young men present themselves as students, would it not be a kindness to them to take some pains not only to ascertain their fitness, but to acquaint them with some of the requirements of professional life?

As to the wisdom of a private tutelage prior to matriculation, I shall not speak further than to express the opinion that such omission would be more advantageous to the student than a term in an office where he had been taken simply for the aid he might be in vulcanizing and scraping rubber plates.

Space forbids a consideration of the curriculum of college further than to emphasize the point that students should learn not theory alone, or method alone, but a judicious combination of both. As Dr. Sudduth expressed it: "The motto over the rostrum should be first, Why? second, How?" I cannot leave this portion of the subject without commending some plan of technical training before allowing students to operate in the mouth. In my opinion, he is much better fitted to perform operations after having become familiar with the shapes of the different teeth, the structure, location of the pulp, canals, thickness and "cleavage" of enamel, etc., by making sections, printing silhouettes, exploring canals, breaking down enamel and opening cavities; with the forms and uses of instruments, and direction of force, by making and using these instruments, with the properties and working qualities of materials by preparing and working them, as well as the advantages of different filling materials as shown by tests. All this to be done out of the mouth and under the guidance of a competent instructor. I read with surprise this clause in a college announcement: "The Junior students are placed at the operating chair at once on entering the class, and are afforded the same facilities in practical dentistry—

both operative and mechanical—that are afforded to the Senior students." I will not criticise this further than to ask what would you think of a blacksmith who would allow an apprentice to shoe a horse the first day he entered the shop? Aside from any other consideration it would seem as if the teeth of human beings, even of the class that come to infirmaries, ought to be entitled to as much consideration as the feet of horses. Then the student can be much better taught upon teeth mounted in articulators, for a large number may be provided, so that the whole class may be engaged upon the same operation at the same time. Another advantage is that in their first attempts they are relieved from any embarassment which might be occasioned by the sensitiveness or idiosyncrasies of the patient. Such practitioners as have students in their offices might adopt to their own and the student's advantage some features of the technical work already in use in some colleges in prothetic technics; taking impressions of objects, making models, making dies, swaging, making solder and soldering, vulcanizing and casting, finishing and polishing.

1. In operative technics a study of the anatomy and structure by making sections, printing silhouettes, mounting and examining slides.

2. Making and tempering simple forms of instruments, such as excavators, chisels, scalers and nerve instruments.

3. Using these instruments in breaking down enamel, preparing and filling cavities, exploring and cleaning canals.

4. Making amalgams, oxy-chloride and oxy-phosphate of zinc.

5. Filling cavities with these materials and tin.

Technics in crown and bridge work may be provided after the same plan.

After the student receives his diploma and engages in practice his education is not finished, by any means, even with the best teaching any college can offer; but this training provides a foundation upon which the ambitious man can build a magnificent structure. Not a small proportion of the materials for this structure may be obtained in the society. My idea is that whenever three or four dentists are in close enough proximity to enable them to get together occasionally, they should attempt some concerted study or experiment. This may be done without the machinery of society organization, and as the States become more thickly populated district societies may be formed; these may meet two or four times a year for an interchange of ideas. We can already point with pride to our Southern Minnesota Society, which comprises among its membership some of the best workers in our State organization.

As dentists become numerous in the larger cities societies which can meet oftener become possible. Our own Minneapolis Society has no cause to blush at its record, and not the least of its benefits is the excellent good-fellowship which exists among its members, Some friendships have been formed which promise to be life-long; but I am satisfied that much more might be accomplished in these organizations if their work was more in the nature of a post-graduate course. Sections or groups might be formed of those interested in histology and pathology, who might prepare normal or pathological specimens to be studied with the microscope, of others who might attempt to establish the value of new remedies, germicides, or antiseptic agents; yet others who might be more interested in materials, methods, or appliances. By concerted effort and the meetings at as frequent periods as were convenient, much might be accomplished; then by small contributions from each member, courses of lectures or instruction might be provided for the expounding of new ideas or the teaching of new methods. Such a plan would make the local or district society what it seems to me it should be, feeders for the State society. Then there would be little necessity for going outside of our own State for attractions, for this would be the proper time and place to present the results of the investigations of the different groups. Then more attention should be paid to the collection of libraries and museums in local societies. Many valuable models and specimens are either lost, or fail to be of benefit to others besides the owner, which would be interesting to many if placed in a museum.

There is one thing in all societies which is becoming apparent that might be corrected: too much time is consumed in the discussion of matters of policy, often trivial, which might be better attended to by an executive committee, thus leaving the time of the society open for more profitable work. Such an amendment will be offered at this meeting, and I trust that the members will consider it seriously.

In the matter of clinics much improvement might be made.

The master of clinics will endeavor to introduce an innovation at this meeting, which you have been somewhat prepared for by the announcement in the programme, and I trust he may have the co-operation of both operators and spectators to make his efforts successful. The feature of the change is making all preliminary preparations before the operator appears before the meeting, the suspension of all other clinics or demonstrations, and the provision of an amphitheater from which all can see. By this manner of holding clinics where the operator has an opportunity to demonstrate and explain his points to all in attendance, the necessity for a report, which is often tedious, is obviated, again saving much valuable time.

Still another feature which has already been introduced in some societies, is to have the operation performed, as far as possible upon members, keeping a careful record for future reference.

Another good plan which is followed more or less closely in some societies is the appointment, or voluntary service, of members on committtees upon different branches, such as literature, therapy, appliances, etc. I would suggest that at this meeting, as an experiment, committees be appointed to report at the next regular meeting upon advances and improvements in the three departments mentioned at least, also that the new executive committee be requested to select the subjects for consideration early, and select some member to edit each subject. I mean by this to secure papers, information and discussion upon the subject.

While much has been accomplished in our own and other societies by methods which often lacked method and system, and by unorganized committees, I think that all will agree that with organized committees and systematic arrangement of the work a marked improvement in the interest of our meetings will result. In presenting the exhibit, classified as it is, and made up of other things besides appliances, we feel that we have introduced a feature that will be so appreciated that an interest will be awakened which will result in something next year that will surpass anything ever attempted.

Societies cannot hope to excel or be of much value from an educational point of view unless they are made up of members of individual excellence. This brings us to the last division of the subject, individual improvement. Our profession has within its ranks many self-made men, non-graduates, but none the less useful and accomplished on this account; also those whose college days antedated many of the more recent advances in theory and improvement in practice. For such there might be provided to advantage, by colleges, where practicable, or by local societies where it was not, post-graduate or practitioners' courses. They need not necessarily attempt to cover the whole field, but take up a very few, even one or two, subjects and consider them thoroughly. One or two weeks under a competent instructor with facilities for individual practice, would benefit the practitioner as much as a full term would the average student, who has a lesser appreciation of his needs. Instances are not rare of men going to cities more or less distant for the express purpose of receiving instruction from some practitioner in his office upon crown and bridge-work, continuous gum, or some other specialty.

It will not be disputed that more might he learned from the same instructors, if you please, were they freed from their practices and able to devote their whole time during that period to teaching. Then instructors and facilities might be provided for those interested in the microscope to study normal and pathological histology, embryology, etc. Let us make the experiment within our State during the year. It will cost us little, and under the most unfavorable circumstances will result in much good. But in our offices, attending to our daily duties, much more might be accomplished if we would cultivate system, if we would devise some simple method of recording operations more fully than simply to remind us of the date when a certain tooth was filled, what it was filled with, and whether it was devitalized or not. Some system of recording operations to show the comparative value of methods and materials would be invaluable to us as a society, if followed by even a respectable minority.

If we could keep records of therapeutic agents, antiseptics, germicides and obtundents, methods of capping, immediate root filling, etc., of materials, different forms and combinations of gold, amalgams and cements. A very little time would suffice for this if we were once in the habit.

In reading if we would provide a book, some form of "index rerum," in which to keep a bibliographical index, arranging the references under topical heads, we would very soon have something of inestimable value, especially if we wished to prepare a paper or post up upon any subject. In this connection I would venture the opinion that as a class we take and read too few journals. One can hardly keep abreast of the times with but one journal, and that one, in some instances, the advertising medium of a dealer. Last, but not least, as a means of growth, is contact and communion with our fellow practitioners. Competition is a good thing, but it is in a spirit of good natured rivalry to excel in attainments rather than number of patients. My word for it, there will be no lack of following for all. How often we see two capital fellows in the same town struggling blindly against each other when in reality they are engaged in a common cause, and if they only knew each other as their friends know them, they might each extend to the other a helping hand, with advantage to both, for then the time spent in scheming how to outdo our competitor would be spent with him in learning how best to benefit our patients, with the result that more patients would come to receive the benefit.

Now, gentlemen, let me appeal to you to remember the significence of your title, doctor, the grandest title a man can wear, if honorably worn, that you are members of a profession, not a trade, and remind you that he who fulfills to the greatest extent the professional idea, rises the highest, consequently succeeds best, not only in wordly possessions but in those other things which endure, standing before the world as monuments after we have passed beyond.

THE EFFECT OF CIVILIZATION ON THE TEETH.

BY DR. C. H. STEARNS, ZUMBROTA, MINN.

In studying the effect of civilization we must first determine the conditions of primitive man, not only with regard to the jaws and teeth, but the whole physicial organization, and study this in comparison with higher forms of animal life. Next study the savage races of the present day as they appeared before contamination by civilization. We should thus have the conditions of primitive man, the savage and the civilized, and should be able to judge, approximately at least, of the change, if any, which is taking place.

In our study of primitive man we meet with many insurmountable difficulties. The time having elapsed being so great, from the scarcity of the remains, it is almost impossible to form any definite conclusion, as only most perfect specimens can have survived, and these only from some fortuitous accident having placed them in situations favorable to their preservation. Yet in all those we have there are certain indications which point in the same direction, toward a more purely animal organization. The further we go back the more nearly man approaches the lower animals physically, and we are forced to conclude that primitive man was simply a well developed animal. The subsequent development of his mental faculities and the habits engendered thereby has had the effect of retarding the development of some portions of his anatomy tending toward suppression, other portions are so changed as to adopt them to the different needs. Scientists have shown that as soon from change of location or habits an organ ceases to be of use, the law of nature causes its suppression. This is marked by its diminution in size, power, and structure until it is reduced to a rudimentary form and disappears. It is not my purpose to try to explain the causes and exact manner of producing this evolution, whether by natural selection, as claimed by Darwin, or by a system of retardation and acceleration, caused by a diversion of growth-force, as claimed by Cope. I wish simply to point out the changes as I find them, and leave the explanation of these vexed questions to men who are capable of treating them with intelligence at least.

This change being most rapid in families possessing the greatest adaptability, produces great variety in individuals during the transition period, this element of variability, when marked, being almost positive proof that the case is in a transition stage, in process of adaptation to a new form of existence in which this organ will either not be needed or be put to some new use.

In the quadrumana and some other mammalia, especially the carnivora, there is at the lower end of the humerus an opening, through which passes the great nerve and artery of the fore-limb, styled the supra-condyloid foramen, of which the humerus of man usually shows a trace, which is in some instances well developed. According to Prof. Turner this occurs in about one per cent of recent skeletons. Prof. Brocha in examining the remains from the grotto of Orrony, M. Du Pont the caves of the Lesse, M. Leguay the Dolmen at Argentuil, M. Prumer Bey those from Vaureal, relics of the bronze and earlier periods, found from twenty-five to thirty-two per cent of the bones perforated, varying with the age of the remains, showing as man has arisen from an animal state there has been a corresponding change of the bones of the arm owing to his change of habits and consequent change in its uses. In the alimentary canal we find another rudiment, the vermiform appendix of the cæcum, being a branch of the intestine ending in a cul de sac. In some of the lower vegetable feeding animals it is extremely long. In the marsupial koala being something more than three times the length of the whole body. It is sometimes prolonged into a tapering point, and sometimes much constricted in parts. In consequence of some change of diet or other cause this has become much shortened, and the vermiform appendix is left as a rudiment.

Its rudimentary nature might also be inferred from the evidence collected by Prof. Canestrina as to its variability.

In the orang this appendage is long and convoluted. In man it is occasionally quite absent and again largely developed. The passage is sometimes completely closed for half or two-thirds its length, the terminal part consisting of a flattened solid expansion. It is commonly from two to five inches in length. Not only is it useless but is sometimes a cause of death from small hard bodies as seeds entering the canal and causing inflammation, four cases of which have come under my own observation.

In muscular development man probably shows more rudimentary forms than any other branch, there being no less than seven classes of rudimentary muscles developed in a few individuals, showing abnormal muscular development. These are so well known I need not further mention them.

Having thus examined the development of different organs, their change under different habits and elimination when they are no longer useful, we are prepared to judge intelligently of those conditions when we find them in connection with the teeth, examining them in the light of experience. Under this light we discover two series of phenomena: those showing race and individual development. For instance, we may find finely developed jaws and teeth and not a sound one in the lot. Let us examine first the evidences of race development, and see what changes there have been and are taking place. In the oldest skulls we find marked differences, the most striking of which is the development of the cuspids next the molars, and lastly the whole jaws. The cuspids are enormously developed, so that the lower teeth are somewhat separated and a marked depression made in the lower jaw for their reception, approaching the form of the carnivora. Darwin accounts for this and the subsequent change in this manner: According to his theory primitive man, in physical and mental development, approached nearly to that of the anthropoid apes, and the fore-limbs were more properly organs of locomotion than hands and arms. The cuspid teeth were depended on as weapons as well as to assist in the division of food. As his brain developed and he assumed a more erect posture, he began using sticks and stones as weapons, and depended less on his teeth, and they became simply organs to assist in the preparation of food, and nature so changed them as to adapt them to his need. As another instance of this change, carried to elimination from not being needed for defense, he cites the suppression of the cuspids in the ruminants upon the development of horns as weapons, nearly, if not all, the ruminants having prominently developed cuspids at the commencement of the development of the growth of horns, some of them still retaining them in rudimentary form. However this may be, certain it is, the lower we go in race development of man, the larger, longer, more prominent and more pointed do we find them. In a Kaffir skull figured by Nayner the cuspids and corresponding spaces are surprisingly large, while according to Blake in the *Anthropological Review*, those of the Naulette skull are enormous.

We sometimes find traces of this development at the present day, evidently cases of reversion, and accompanied by other developments showing conclusively their revolutionary nature.

Another fact which Mr. Darwin might have used in support of his theory is, where we find this development we also find the tendency to use the teeth as a third hand.

As to the molars, we have reason to believe, in primitive man, the third was much the largest of the three. In savage races we find them fully developed, and of good sound structure fully equal to the others. In the oldest skulls they are not only equal, but larger, while in civilized races they are smaller, of poorer quality, later in development, and in all respects presenting the greatest variability, showing they are in process of elimination. Professor Schoffhausen accounts for it by the posterior portion of the jaw being always shortened in civilized life. Good so far as it goes, but that is a very little way. Mr. Darwin accounts for this shortening by the civilized races feeding habitually on soft cooked food—a little further, but not far enough. It seems to me there are several causes, all operating in the same direction, mutually dependent on each other, so much so that it is difficult to tell which is cause and which effect; but it would seem the cause upon which all others depend is brain development. Thus, according to Darwin's idea, the primitive man depended on his teeth, not only for mastication, but as a means for obtaining food and of defense. This would necessitate an enormously developed jaw, with powerful muscles to operate it. In the next stage he would have advanced so far as to use his hands as weapons to obtain his food and assist in its preparation, and we would expect to find a development of teeth and jaws answering these conditions; that is, a perfect grinding apparatus, with, perhaps, some indications remaining of the former use of the cuspids. We have this in the oldest skulls. They are perfectly adapted to a being who depended on his own exertions for obtaining food and for protection, living an animal existence in the open air, and whose food, when obtained, was in its crudest form, depending on the exercise of his jaws for its reduction to digestible form.

The next stage would be when his mental development was such that he had made some progress in the arts, to enable him to manufacture implements for the chase, clothing, some form of shelter, and made use of processes for the preparation of his food, rendering it more digestible, and extending the number of articles composing his diet. This, in lessening the amount of exertion necessary to sustain life, would reduce the amount of food required, and this, being more easily assimilated, would greatly lessen the use of the jaws and teeth, and we should expect changes accordingly. We have these conditions in the more advanced savages, and we find corresponding developments. The jaws are much shortened, the cuspids but slightly larger than the others, and have lost their prominence, the molars much smaller, especially those nearest the angle of the jaw, thus reversing the former arrangements, and increasing in size toward the front, but showing, from their uniformity, symmetrical arrangement and good quality, that this change has been but one of form to suit them to present needs, and the transition period has long passed.

The next stage is the highest in development, what we term civilized man. In this we meet about as many difficulties as in the first. Man is at present evidently in a transition period. We have all, or nearly all, stages of development, physical and mental, especially mental, all subject to artificial modes of life, which, to the student, makes "confusion worse confounded." At present we only wish to show the race development which is taking place. To do this we must determine the type of civilization; see in just what manner the civilized man differs from the savage. To me the only difference is the one on which all others depend—brain development. The civilized man is the one whose brain has become the ruling organ, the one on which he depends for the accomplishment of all his ends, and physical exertion is reduced to a minimum. In other words, the direct type of civilization in the encephalic type or temperament is classed by some writers as nervous, but the term is a misnomer. Of course there are other types due to civilization, as the lymphatic, but they are merely passive and of a secondary nature.

Now, in the light of former experience, what should we expect to find as the condition of the teeth in such an individual? We certainly should not expect to find the enormous cuspids, but rather a tooth more adapted to dividing and mixing with the saliva food, the chewing of which has largely been done by machinery. The molars, partaking also of the change, much reduced in size, and perhaps one of them in process of elimination. This would have become almost a necessity from the shortening of the jaw, as well as from Nature's habit of furnishing only what is required. We should look for this tooth at the back part of the jaw, as what is now required is more of a mixer than a grinder, and this tooth being so near the base of the tongue would render it less available than any of the others. This, as also its being placed in the exact situation where more room is needed for the changes which are taking place in the jaw, would point to the third molar as the one to be removed.

Should this be correct, we should expect to find in this tooth the greatest variability in size, shape, structure, and period of development. Whether we have these conditions presented in the teeth of civilized man I will leave you to determine; but a word right here—should we find this condition, would not the fact of the sixth-year molar remaining as nearly unchanged as it is, demonstrate its importance and forbid its indiscriminate extraction, as is sometimes practiced?

Having followed out the line of race development, let us now take up the other series, that of the individual. This in the earlier stages is of no importance. In savage life all would be subject to the same habits and conditions, and according to the law of "the survival of the fittest" weakly specimens would be soon weeded out, no chance given for their perpetuation, and we should find nearly the same development in all. That this is the case my examination of some four score Indian and Mound Builders' skulls has convinced me. When we examine civilized life in this respect, we find a great change. We have every conceivable difference in conditions and customs. The lower orders of development, instead of having improved by contact with the higher, have become debased physically, if not mentally, probably both.

They have been passive, simply the mud carried along by the stream, sometimes brought to the surface by the whirling current, but sure to settle at the bottom in the still places.

They have, from their passive plasticity, been easily moulded by the higher class to its own harm, leading it to extremes in the other direction, which are harmful in their effect, and which, reacting on the lower classes, deprive them of the benefits they would otherwise derive from their more robust physical development. One way in which this is shown, and the one most affecting the teeth, is the selection and preparation of food. The class not having physical labor to perform would naturally not require so much food, nor that of the bone and muscle-producing class, and would carry this to extremes, which the feeling of emulation, passive nature, and the habit of being guided by the higher class would incline them to copy, and which would have much more of an evil effect on them than the others.

Thus, wheat possessing as many nutritive elements as any grain, is deprived of the stronger, coarser ones, and meets the approval of the higher class as the fine white flour, which is unsuited to the wants of the laboring man, and shows its effect on his teeth accordingly, first by depriving them of the necessary lime salts, then of such exercise on coarse substances as would keep them clean and bright; in its place covering them with a sticky pasty mass, composed largely of starch, which by fermentation keeps them bathed in acids, ending in their destruction, which his refinement has not taught him to combat, as does the higher class, by replacing the friction of the coarser foods with that of the brush. The system may bear up under these disadvantages, but it is obvious that, so strained, it will be in a poor condition to meet any extra demand. Such a demand is made on the female during the period of gestation. The system is called on, not only to supply its own demands, which with this diet taxes it to its full capacity, but those of the fœtus, an impossibility, and a period of vegetable lime starvation ensues. The bones and teeth of the mother suffer in consequence. The fœtus suffers as much, perhaps more, and the child is born in a weakened condition, which it does not improve until such an age as to be able to supply its own wants, not then unless proper food is obtained, which is seldom the case. As a consequence we find the temporary teeth, whose crowns are formed during a time, nearly, if not all of which it is dependent on the mother for sustenance, of such poor structure that they crumble like pieces of chalk. If results to the child stopped here, they might not be so bad, but in this impoverished condition, and on a similar diet to the one which caused it, the child has to supply material for the growth of the whole bone system, as well as the permanent teeth, and naturally becomes a prey to the whole array of children's diseases. We know what marks they leave, marks of so many starvation periods. Only with adult age does it reach a fairly robust condition, when the demand is such as nature can supply from the material at hand. With all this is it to be wondered at that the bones of the jaws are poorly developed, and irregularities follow? that the teeth are of poor quality and succumb rapidly to disease? Is it not more of a wonder that we have teeth at all?

I am well aware of the differences of opinion on this part of the subject, and have no doubt that many would take issue with me upon it, but whether the cause is a lack of lime salts in the food, or their being in a form which the system cannot appropriate, or a derangement of the organs from improper preparation of the food, rendering them incapable of their assimilation, or from deprivation of some portion of the grain which assisted in the digestion and assimilation of these salts, the result is the same as if there was a total lack; therefore for the purpose of studying this effect it is safer to assume this lack. So fully am I convinced of the importtance of this portion of the subject I am willing to hazard a statement which may seem visionary. I believe could the mothers be placed under the care of an intelligent dentist during the period of gestation, and the children be subject to the same care, in the third generation caries and irregularities would be unknown, except as curiosities, the same as other freaks, and their disappearance would be accompanied by that of a large number of other burdens now borne by civilized men and women.

ELECTRICITY AND ITS USES IN DENTISTRY.

BY DR. W. A. JONES, MINNEAPOLIS, MINN.

Mr. President: You will perhaps pardon me if I modify or change the title assigned me, "electricity and its electrolytic action" to "electricity and its uses in dentistry." Some months ago I had the pleasure of reading before the Minneapolis Dental Society, a paper which was largely upon the theory and principles of electrolysis, and to-day I propose to simplify matters by calling attention to electricity in general, and how and why it may be of use to dentists.

I forewarn you that I can bring you nothing new, but if I can stimulate and interest you in experimenting you certainly can ask for nothing more.

I freely confess that my knowledge of this subject is superficial, but I hope to gain and profit by your discussions.

Assuming that you are acquainted with all the forms of electricity, you will perhaps not think it unkind of me to take them up briefly, simply to refresh your minds.

Static electricity, or Franklinism, is derived from friction of two bodies, usually in the form of one or several revolving plates, with another body closely adjacent. This form will not interest you, as you will never have occasion to use it.

Faradaic electricity, also called "induced," or "interrupted," is a current of high tension. The circuit of a battery cell is made to pass through a coil of wire, which encloses a bar of soft iron or a bundle of soft iron wires. This bar becomes magnetized and demagnetized, and thus we have a current which is alternating; a second coil of wires is wound about the first, and a current is *induced* in this. Consequently the patient does not get a current direct from the battery cell, but from the outside coil of wire. In this form of electricity there can be no chemical action, as it is simply induced through a secondary wire. Many manufacturers of these batteries claim chemical action for them, but you can readily see how impossible it is. Any battery thus recommended can be thrown out as worthless and unreliable. Such instruments should not be marked *positive* and *negative*, as the duration of such conditions is so short as to practically do away with them.

I can see how a Faradaic current could be of use to obtund a nerve, or distract the attention of a patient from a painful tooth while the operator extracted. The effect in such cases is wholly cerebral; the sharp and sudden impression made by the current will for a time so effectually mask a tooth pain that the dentist has time to get in his deadly work before the nerve centers can comprehend the conflict of the two impressions.

The only form of electricity that you can employ scientifically is Galvanism. It differs from Faradaism, in that it is a chemical current and not induced. It is also continuous and not interrupted nor alternating; it always flows in one direction. There are an enormous variety of Galvanic cells, but it is only worth while to mention a few of the most important and those adapted to your work. If you do not care for expense, and if you want a small, compact, ever-ready and no-trouble instrument, the Barrett Dry Chloride of Silver Battery is the best. It requires no attention, does not get out of order, always clean, always constant. It has a rheostat or current regulator, to prevent shock, etc. A 24-cell battery with outfit would cost about $30. You could get along with a 16-cell battery of this kind. If you want something stationary, a battery that you can put in the basement, the Law Telephone Cells will meet your approval. When it is set up and connected the covers are fastened down and you are not annoyed with it. It will last without renewal for about two years; then the zincs can be changed and new solution put in, and it is good for another two years. The only objection to the battery is that the connections are not always perfect, and thus it *may* get out of order. To overcome this, Mr. Thompson, of the Minneapolis Construction Company, has improved upon the Law cell by making clear, clean connections which cannot possibly become changed. The carbons are in one piece, and the regulation zincs fit without alteration, and what is of some advantage the price is reduced. For good work you will need about ten such cells. They can be put out of the way and wires brought up to your chair from any distance. The current is always ready and under full control. The Gassner Dry Battery can be substituted for these cells if you wish; the only advantage is that they are dry; the disadvantage is that they are not as strong. The McIntosh, with which you are more or less familiar, will do good work, but it requires more care and is not so easy to manipulate or control. Whatever cells you use should be connected in "compound circuit" or "in series"; the carbon and zinc elements should be joined together and continued so throughout the entire series of cells. The wire which connects with the carbon element is the positive pole and the one from the zinc is the negative. This you should bear in mind. You can readily distinguish the poles by using colored cords, as black and red.

Now, this current should run through a regulator or rheostat. Through this you can use your entire battery, and thereby use all of your cells proportionately. You can use the smallest possible amount of electricity, or you can get the full force by a few turns of the instrument. The regulator I have here is one designed by my friend, Dr. A. W. Abbott, of Minneapolis. It is the simplest and best in the market. It has been thoroughly tested, and not found wanting in any particular. You see it is neat and small. Every one who has a battery should have a regulator.

In addition, you want electrodes for making the application. You will find that an ordinary bur will make one electrode; the shaft of the bur ought to be coated with the following:

℞ Gum shellac (brown)	1	drachm.
Squibbs sol. india-rubber	1½	"
Wood naphtha	2	"

Coat thoroughly with several layers; then polish and coat again until smooth. This insulates the shaft, and prevents the current from passing to any of the adjacent tissues, where it is not needed. The other electrode should be larger, about the size of a dime, or can be made elongated, and covered with linen or flannel, and simply placed upon the tongue, care being used to prevent the connections from being exposed. In this kind of electrode you can readily change the covering, thereby insuring cleanliness.

Now we are ready for work. What do we expect to do, and how and why do we do it? A word about the theory of galvanism. A galvanic current is due to the chemical decomposition of one or more of the elements of a galvanic cell. It is constant and continuous; consequently it has a remarkable power of penetrating animal tissue placed in the circuit; of producing electrolysis, used in electro-plating and electro-lighting. It must be remembered that it has no external manifestations of activity, because it has no interrupter. You can readily detect the galvanic current by placing the electrodes on each cheek. You will notice a metallic taste; you will find the amount of saliva increased, and, if the current is strong enough, you will get a flash, and, if stronger still, will knock you down.

There has been a great deal of speculation as to how the galvanic current acts. It has been supposed that the current could be traced from one electrode to the other by imaginary diverging lines, which expanded and then came together again as they approach the end of the circuit. This may be the true theory, or it may be that the one pole placed upon a given surface will excite the molecules to action, and the movement or vibration is extended from one to the other, and thus the effect of the current is carried on to another given point. We are reasonably certain that a galvanic current is penetrating.

It is easily demonstrated in this way: One electrode is moistened with a solution of iodide of potassium; the other electrode is placed on some different or opposite point; the circuit is made and allowed to flow for a short time. Iodine can be detected in the urine, showing that the drug has been introduced into the economy.

· A current passed through water produces given results. At the positive pole we have oxygen and acids, and at the negative hydrogen and alkalies. A solution of iodide of potassium decomposed by electricity shows iodine by its blue color at the positive and colorless at the negative poles.

The human body offers an enormous power of resistance to the passage of electricity—it is said to be twice that of the Atlantic cable. Well moistened surfaces and electrodes diminish the resistance, and thus enable the current to flow easily. As a consequence mucous membranes, on account of their vascularity and moisture, offer but little resistance, while bones and teeth with their density and comparative dryness offer greater obstruction, still a current will go through them.

We do not *know how* electricity acts, we can only speculate. Most authorities claim that the negative pole is stimulant, while the positive is sedative, while others say that the arrangement of the poles is immaterial. We think the negative is stimulant because it is supposed to increase the irritability of nerve fibres, while the positive diminishes the irritablity and is therefore sedative.

I know that if a patient suffering from facial neuralgia and I apply the positive pole to the nerve trunk and the negative to some indifferent point, I can relieve the pain, but if I reverse the electrodes I am very apt to increase it.

Now if I increase the current to an unusal strength I may cause destruction or decomposition of tissue, and thus bring about electrolysis. You will readily see why I have changed my title. You do not want to cause electrolysis, you want to stop several degrees short of it, except when you are trying to reduce inflammation or to control hæmorrhage or to remove growths. In electrolysis a certain amount of destruction or decomposition of tissue takes place. At the negative pole you get hydrogen and alkalies, and at the positive oxygen and acids, if you are using needles or penetrating tissue you will find bubbles of hydrogen at the negative and at the positive, if that be the working needle, the acids will encrust and corrode the point. I imagine that there are but few instances where electrolysis would become necessary in dentistry. Fungus growths could be easily and readily destroyed by a moderate current.

In such cases the negative pole of a battery connected to a fine broach or insulated needle could be passed up into the root canal—the positive electrode on the tongue or cheek—destruction of tissue would take place, shown by the accumulation of gas and the change in color of the growth. With the aid of cocaine the operation would be painless. Any similar diseases, as Riggs, it seems to me might be treated in a similar manner if you can reach the trouble. By electrolysis you ought to be able to destroy root sacs.

But it you do not want to induce destruction of tissue, but nerve stimulation, you may still use the negative needle, but moderate the strength of the current, and move the application about, not letting it rest too long in one spot. In the treatment of flabby gums you can readily see the effect of the current by the redness of the part, showing that the blood vessels have relaxed and more blood coming in. But if you wish to produce a sedative effect to relieve pain you reverse your electrodes, apply the positive pole to the spot to be operated upon, use that as your working pole. The current alone will obtund the tooth if applied for ten or twelve minutes, but you can hasten matters by the use of cocaine ; the drug is carried into the tooth and materially diminishes the sensitiveness.

In using electricity as a hæmostatic it is necessary to carry your application into the bleeding parts, and if possible pierce vessels. The needle becomes corroded from the acids and oxygen, and in this way coagulation of the blood takes place and acts as any other clot. Great care should be exercised in the removal of the instrument—the current should be gradually decreased and the needle slowly withdrawn, otherwise you may excite further hæmorrhage.

In confined places the accumulation of gas may go on and infiltrate too much of the surrounding tissues and abscess result. This rarely happens however. It is well to be on the safe side and use mild currents and increase at the time of the sitting.

In trying to relieve congestion, your bur electrode should be covered with absorbent cotton, and well moistened. Do not try to use a dry electrode, for your experiment will be a failure.

The principal points for you to remember in the use of electricity are that the negative pole is tonic, stimulant, and destructive, while the positive is sedative and hæmostatic. You may think with others who have studied electricity that it makes no difference which pole you use—try for yourselves.

Electricity, like heat and light, is a force powerful and but little understood.

Noah and some others since his time have remarked that electricity is still in its infancy, but I am induced to think that infancy has been displaced in favor of youth and its accompanying intelligence.

Imagine a force that can be used and controlled like electricity. Dissimilar metals that heat would either melt or not affect at all, can by molecular adhesion be fused by a current of electricity and made as one solid bar. Think how much can be done in surgery by electricity—tumors and growths of various kinds removed painlessly. How much in medicine is due to the moral effect of some forms of electricity we are not prepared nor compelled to say. We do know that galvanism will do certain things wholly independent of the imagination.

Our bodies contain a certain amount of electricity which can be detached and measured. The decomposition and the exercising of certain forces in the body together with the fluids generate a current; we may call it nerve force if we chose, but who shall say it is not a form of electricity?

I have purposely omitted electrical terms and instruments necessary to the specialist, for it would be confusing and uninteresting to you. I presumed that you wanted the practical and working part of electricity as applicable to dentistry. I hope that you may see fit to experiment for yourselves; you may be disappointed by failures, but you will find that in the majority of instances you will succeed.

PROCEEDINGS OF SOCIETIES.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The sixth annual session of the National Association of Dental Faculties was held in the Town Hall, Saratoga Springs, N. Y., commencing Monday, August 5, 1889, at 10 a.m.

The Executive Committee reported that credentials had been received, in accordance with the resolution adopted last year, from the following colleges:

Chicago College of Dental Surgery, Truman W. Brophy.
Indiana Dental College, J. E. Cravens.
State University of Iowa, Dental Department, A. O. Hunt.
New York College of Dentistry, Frank Abbott.
Boston Dental College, J. A. Follett.
Harvard University, Dental Department, T. H. Chandler.
Ohio College of Dental Surgery, H. A. Smith.
University of Pennsylvania, Dental Department, James Truman.
Baltimore College of Dental Surgery, R. B. Winder.
Dental Department of Southern Medical College, L. D. Carpenter.
Vanderbilt University, Dental Department, W. H. Morgan.
University Dental College, J. S. Marshall.
Missouri Dental College, W. H. Eames.
Kansas City Dental College, J. D. Patterson.
Dental College of University of Michigan, J. Taft.

Subsequently credentials were received from the Pennsylvania College of Dental Surgery, represented by C. N. Peirce; Harvard University, Dental Department, Thos. Fillebrown; and Louisville College of Dentistry, J. Lewis Howe.

Columbian University, Dental Department, represented by J. Hall Lewis, and University of Maryland, F. J. S. Gorgas, were elected members of the association. The application for membership of the Royal College of Dental Surgeons of Ontario was reported favorably, but the Executive Committee expressed a doubt as to the propriety of admitting it, owing to the title of the association, which would seem to confine membership to colleges in the United States.

Applications from the American College of Dental Surgery, Chicago, the College of Dental Surgery of the University of Denver, and College of Dentistry, Department of Medicine, University of Minnesota, were laid over one year under the rules.

After a long discussion, the association adopted, by a vote of twelve to six, a rule requiring attendance upon three full regular courses in separate years before examination for graduation. By a vote of eighteen to one, the length of the regular courses was made "not less than five months each."

The time when the new rules shall go into effect was, on motion of Dr. Truman, fixed at the beginning of the session of 1891–92. It was also ordered, on motion of Dr. Patterson, that the resolutions requiring attendance on three terms be published in the announcements of the various colleges for the session of 1890–91.

A committee, consisting of Drs. Truman, Taft, Cravens, Brophy and Howe, was appointed to take into consideration the equalization of college fees. The committee subsequently reported a partial tabulation of fees, with a recommendation that the minimum fees be fixed at $100 a year. The report was laid over under the rules, and the committee continued.

Drs. Cravens, Marshall and Patterson were appointed a committee to codify the rules, and report next year.

Dr. Fillebrown, from the committee appointed to consider the request of the Baltimore College of Dental Surgery with reference to the granting of the degree of D. D. S. to a prominent practitioner without attendance upon lectures, reported in favor of declining the request. The report was accepted.

On motion of Dr. Gorgas, amended by Dr. Brophy, it was ordered that the colleges of this association print the list of their matriculates at the previous session, with the States or countries from which they come, in their annual announcement, with an asterisk (*) opposite the names of those not in attendance, and a foot-note stating the fact.

On motion of Dr. Truman, it was ordered that colleges making applications for membership be notified by the Secretary that it will be necessary for them to appear by representative before the executive committee.

Dr. Marshall offered the following, which was adopted:

Resolved, That all applications for membership reported upon favorably by the executive committee shall lie over one year before final action may be taken thereon.

Dr. Abbott offered a resolution requiring colleges of this association desiring to confer the honorary degree, to submit the names of the persons so to be honored to this association for approval. Adopted.

The Committee on Text-Books reported that the work recently published by Dr. Fillebrown had not been submitted to the committee for approval. The report was accepted.

The committee also reported that they had examined the work on "Orthodontia" compiled by Dr. S. H. Guilford, and they recommended that it be adopted as a text-book. The report was accepted.

On motion of Dr. Truman, the work on "Dental Chemistry," by Dr. Clifford Mitchell, was accepted formally as a text book.

The following resolutions were laid over under the rules:

Offered by Dr. Brophy:

Resolved, That graduates in medicine who have not had at least two years' practice in operative and prosthetic dentistry shall be required to attend the lectures and engage in the practice-work in these departments during two annual sessions previous to admission to the examinations for the dental degree.

Offered by Dr. Patterson:

Resolved, That after the session of 1891–92 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges of this association, but shall not entitle him to an entrance into the senior class.

The following officers were elected for the ensuing year:

James Truman, president; L. D. Carpenter, vice-president; J. E. Cravens, secretary; A. W. Harlan, treasurer; Frank Abbott, J. Taft, and F. J. S. Gorgas, executive committee.

The following committees were appointed: *Ad interim* committee, Drs. T. W. Brophy, R. B. Winder, and J. A. Follett; Committee on Schools, Drs. H. A. Smith, J. D. Patterson, J. Lewis Howe, W. H. Morgan, W. H. Eames.

Adjourned to meet at the call of the executive committee.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners held its eighth annual session in the Town Hall, Saratoga Springs, N. Y., commencing Tuesday, August 6, 1889, at 1 o'clock p. m.

The following State Boards of Examiners were represented: Illinois by C. R. E. Koch; Ohio, J. Taft, H. A. Smith; New Jersey, F. A. Levy, J. G. Palmer; Indiana, S. T. Kirk; Maryland, T. S. Waters; Massachusetts, L. D. Shepard, J. S. Hurlbut; Vermont, Geo. H. Swift, James Lewis; Delaware, C. R. Jefferis, T. H. Gilpin; Colorado, P. T. Smith; Georgia, A. G. Bouton.

Delaware and California were admitted to membership.

Drs. Jefferis, Shepard, and Koch were appointed a committee to consider a mass of correspondence with reference to the standing of a college whose name had been omitted from the list of colleges whose diplomas were recommended to be received by the State boards. This committee was afterward constituted the Committee on Colleges.

The committee at a later session reported, recommending that the Secretary be instructed to inform the Dental Department of the St. Louis College of Physicians and Surgeons that owing to insufficient information the association is unable to take final action on its application for recognition; and sustaining the action of the officers in omitting the name of the University of Maryland, Dental Department, from the printed list of recognized colleges last year. The report was received and adopted unanimously.

The committee also reported the following list of colleges which may be recommended as reputable by this association:

American College of Dental Surgery, Chicago, Ill.
Baltimore College of Dental Surgery, Baltimore, Md.
Boston Dental College, Boston, Mass.
Chicago College of Dental Surgery, Chicago, Ill.
College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.
Dental Department, Columbian University, Washington, D. C.
Dental Department of Northwestern University, Chicago, Ill.
Dental Department of Southern Medical College, Atlanta, Ga.
Dental Department of University of Tennessee, Nashville, Tenn.
Harvard University, Dental Department, Cambridge, Mass.
Indiana Dental College, Indianapolis, Ind.
Kansas City Dental College, Kansas City, Mo.
Louisville College of Dentistry, Louisville, Ky.
Minnesota Hospital College, Dental Department, Minneapolis, Minn. (Defunct.)
Missouri Dental College, St. Louis, Mo.
New York College of Dentistry, New York City.
Ohio College of Dental Surgery, Cincinnati, O.
Pennsylvania College of Dental Surgery, Philadelphia, Pa.
Philadelphia Dental College, Philadelphia, Pa.
School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.
St. Paul Medical College, Dental Department, St. Paul, Minn. (Defunct.)
University of California, Dental Department, San Francisco, Cal.
Northwestern College of Dental Surgery, Chicago, Ill. (Defunct.)
University of Iowa, Dental Department, Iowa City, Iowa.

University of Maryland, Dental Department, Baltimore, Md.
University of Michigan, Dental Department, Ann Arbor, Mich.
University of Pennsylvania, Dental Department, Philadelphia, Pa.
Vanderbilt University, Dental Department, Nashville, Tenn.

The committee recommended, also, that the standing committee on Colleges be instructed hereafter to take cognizance of and investigate all charges against any college; that they give the accused an opportunity for defense, and that they report a revised list of colleges at each annual meeting, after having investigated all complaints; and that this same committee also have authority to inquire into the proper equipment and organization of colleges not now on our list, so that they may be able to report as to the capability of such institutions to give acceptable instruction, both as to the quality and quantity of its teaching.

After hearing the representative of the College of Dental Surgery of the University of Denver, Dr. P. T. Smith, that institution was added to the list, and the report was then adopted.

Dr. Koch offered resolutions that it is the sense of this association that no one should be permitted to assume the responsibilities of a dental practitioner until he shall have had at least three years previous study and instruction, inclusive of three full terms of not less than five months each, in a properly organized and equipped dental college: provided, that time spent in the study of medicine or graduation from a medical college may be credited on this requirement not to exceed the period of two years or two full terms of collegiate instruction; and recommending to such State boards of dental examiners as are by the laws of their respective States required to issue licenses to practice dentistry to all holders of diplomas from reputable dental colleges, that they make such rules as shall require all colleges to make three full calendar years of study and the attendance upon three full college terms of not less than five months each a prerequisite to graduation; and that only such colleges as shall comply with this rule on or before the beginning of their scholastic year of 1890–91 should thereafter be considered as reputable; and that all State boards should, when their State laws permit the same, decline to grant a license to practice to any one who cannot produce evidence showing that he has spent at least three full years in study and preparation before attempting to assume the responsibilities of a dental practitioner.

Referred to a committee consisting of Drs. Kirk, Palmer and

Bouton, with the information that the National Association of Dental Faculties had adopted a rule to go into effect at the session of 1891–92 requiring attendance upon three regular courses before examination for graduation.

The committee reported recommending that the portion "relating to States where an examination is held and license granted be approved." The report was adopted.

Dr. Koch moved that the secretary be instructed to publish a notice in the dental journals informing all dental colleges not now recognized as reputable by this association that in order to be enrolled upon the list of colleges recognized by it it will be necessary for such colleges to apply for recognition and show that their workings are such as to entitle them thereto. So ordered.

Dr. Shepard moved to make the Standing Committee on Colleges consist of five members, whose duty it shall be to report annually upon the colleges entitled to recognition. So ordered.

The following officers were elected: T. S. Waters, Baltimore, president; C. R. E. Koch, Chicago, vice-president; F. A. Levy, Orange, N. J., secretary-treasurer. The president appointed as the Committee on List of Reputable Dental Colleges Drs. L. D. Shepard, C. R. E. Koch, C. R. Jefferis, F. A. Levy, and S. T. Kirk.

Adjourned to meet at the time and place of the next meeting of the American Dental Association, at 9 a. m. of the first day.

MINNESOTA STATE DENTAL ASSOCIATION.

The Minnesota State Dental Association convened July 10, 1889, at the Spalding House, Duluth, Minnesota, for its sixth annual meeting.

The convention was called to order by the President of the Association, Dr. T. E. Weeks, of Minneapolis.

In the absence of the Recording Secretary from the State, the election of a Secretary *pro tem.* was the first order of business. Dr. C. H. Robinson, of Wabasha, was nominated and elected by acclamation.

The President then introduced William F. Phelps, of the Duluth Chamber of Commerce, who made the following address:

Mr. President, Ladies and Gentlemen:

It is a practice long sanctioned by custom when a body of intelligent, educated gentlemen, organized for the promotion of human welfare, honors a community with its presence, for that community to recognize the distinction conferred upon it by extending its cordial and hearty welcome. It is, therefore, my agreeable duty this morning in behalf of the citizens of Duluth to extend to you, one and all, their cordial greetings, and a welcome to the city of their hearts and homes. To many, perhaps to most of you, this may be the first opportunity you have enjoyed to visit the head of the great chain of lakes, and the city within the borders of our own State which is rapidly becoming the chief trade center of the new Northwest.

You have doubtless observed that it is the ultimate jumping off place, so to speak, of that system of waterways which Nature has stretched along between the eastern seaboard and the center of the continent. It is the point where the trans-continental commerce of a vast empire must meet for exchange.

Duluth, therefore, occupies a commanding strategical position, for there are such points in the peaceful pursuits of commerce, as well as in the game of war, and the men who have the sagacity and enterprise to seize and hold them will be the victors in the contest for commercial supremacy. In the light of these facts, as citizens of the commonwealth of Minnesota, you will surely be interested in the study of the situation.

Gentlemen, we beg to assure you that we recognize the inestimable value of your profession in the past and in the present in the promotion of human well-being. The progress you have made within the memory of many here present, has been truly wonderful. You have nearly abolished pain in the treatment of those important organs which are essential to the first step in the preparation of food for the process of digestion, and in many cases you have made improvements upon Nature herself through the practice of your noble profession. In your special field you are the educators of the people, and they begin to recognize your great services to humanity. I need not remind you that there are two things to which the average American citizen claims to have a divine right: The first is, "to speak in public on the stage," and the second to get on the outside of a good dinner when he sees it. To accomplish either of these feats good teeth are indispensable. When a citizen of this republic cannot "jaw," metaphorically speaking, in either of these directions, he is out of his element. If you will kindly bear this in mind you will readily see what an important part you play in the development of the American orator and diner.

But seriously, the relations which the human teeth sustain to the digestion and assimilation of food are of the most intimate and important character. In fact, good mastication lies at the foundation of good digestion, the prime condition of good health, and therefore of all truly efficient mental and moral activity. All honor, therefore, to the men who are earnestly striving to elevate their profession, bringing it up to the standard of exact science and to the requirements of modern life.

We hope, ladies and gentlemen, that you will find your brief sojourn in this city both agreeable and profitable. You will have the opportunity of a trip out upon the great lake and over the beautiful bay, and I trust you will not neglect to climb some of our hillsides and gain some of the inspiring views afforded from the summit. The effort may seem somewhat formidable but I want you to remember that we will furnish you with the air, free, pure and invigorating, which will render the ascent easy, while the outlook from the hill top will well repay the effort.

A distinguished gentleman from England, Sir Henry Tyler, was here a few months ago. Before breakfast one morning he walked to the top of one of the hills, and afterward assured us that this city enjoyed views which for beauty were not approached by any city in Europe which he had ever visited, with the exception of Edinburgh, Scotland. I hope you will pluck up the courage and spirit to do as he did. Let us hope that the result will be such as to lead you to establish this city as the permanent place for holding your conventions.

Again, gentlemen, I bid you a most cordial and hearty welcome to our city.

On behalf of the Society, Dr. L. D. Leonard, of Minneapolis, responded, in the following words:

I rise in behalf of the Minnesota State Dental Association, to thank the gentleman, Mr. Phelps, and through him the people of Duluth, for the kind welcome we have received at their hands. We are not a society composed of men of capital, whose meeting at this time is going to benefit Duluth in a financial way. Our influence in the matter of the wheat or the coal traffic, in mining, or anything that tends to make Duluth the business center that it is, is almost nothing. Therefore it is not from a financial point of view that the people of Duluth look upon this Association in extending to it the courtesy it has received. What then do the people see in our meeting, and what do they expect of us that they treat us so cordially? It is this, Mr. President, that notwithstanding the fact that dentistry made its beginning in the blacksmith shop, it has, through individual effort, and the efforts of such societies as this, been raised to a standard which the most intelligent people everywhere are willing and glad to acknowledge as professional.

They look upon our profession as one which benefits the human family. They also recognize that it is to these meetings, where every man is invited to tell what his individual experiences have been during the past year, where he has succeeded and where he has failed, that credit is due for advancement in knowledge and skill. Gentlemen, we have only to keep in view one thing, and that is the higher attainment personally and professionally of our profession and the men who compose it. If we make this effort the people will recognize it, and welcome us everywhere as cordially as have the people of Duluth to-day. Again in the name of the Association I thank you.

The President: Ladies and gentlemen, Dr. Leonard's address closes the exercises for this morning's session. The object of this session was to bring all those in attendance together, and acquaint them with the plans of our entertainers, the dentists of Duluth; to listen to the addresses, and plan for succeeding sessions.

In this connection I will state that it has been arranged by the committee, and agreed to by myself, that I will be in the chair promptly upon the hour named for the call to order of the session. The gavel will fall promptly, and I hope we will have the co-operation of every one in getting together on time, as all must recognize the importance with so full a programme as we have. Dr. Brown, on behalf of the dentists of Duluth, will now inform you as to their plan for your entertainment this morning.

Dr. Brown: *Ladies and Gentlemen*, the Duluth dentists are prepared to give you a boat ride this morning. The boat will be ready to start at ten o'clock from one of the docks near here. This will occupy the rest of the morning.

Dr. C. H. Goodrich, Vice President, then took the chair, and the President delivered the annual address.*

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* See page 540.

The President then stated that there were a number of visitors present, and requested them to come forward that they might be introduced to the members and the courtesies of the floor extended to them. Dr. A. W. Harlan, of Chicago, Dr. S. J. Hill, of Fargo, Dr. H. L. Starling, of Fargo, Dr. J. H. Wingander, of Hudson, Wis., Dr. S. E. Catherell, of Duluth, Dr. A. W. Ackerman, of Blue Earth City, and Dr. A. J. Upham, of St. Paul, were then presented to the members of the society and registered in the visitors' book.

Dr. C. H. Stearns, of Zumbrota, Minn., read a paper on "The Effects of Civilization on the Teeth."*

The discussion upon Dr. Stearns' paper was opened by Dr. Bailey, who said:

I feel very diffident in coming before this society at this time to open a discussion upon this paper, because I have very strongly in mind an expression made at the meeting of the Chicago Odontological Society—that we needed, in discussing a subject of this kind, more scientific knowledge. Not until Saturday did I have the slightest knowledge that I was to speak on this paper. However, there are some truths which the gentleman has brought out here which I may emphasize, and then give some one else an opportunity to take up the paper.

In the opening of the Doctor's paper he refers to the elimination of certain teeth from the jaws, change of form and change of function; and in the position he takes he will be sustained by most dentists; none will differ from him with regard to the apparent elimination of the molar teeth from the jaw. I was glad to note that, in discussing the influence of civilization upon the teeth, the gentleman did not refer the deterioration of the teeth to civilization, but rather to the habits of civilization. I think, however, that the conclusion that the teeth of the present day are weaker than those of the past, is not borne out. The influence of the use and disuse of the teeth, as well as other organs of the body, tends to deterioration. We are given organs, whether they be bones or muscles, to use; a lack of use tends to make them almost useless. This is true of the teeth; still I am not ready to take the ground that the poor teeth are the result of disuse, nor yet the ground that they are the result of food lacking in phosphates. The gentleman referred to the use of fine flour as being very injurious. I wish to state that under the present improved methods, the finest flour retains most of the nutritive qualities of the wheat. A strong argument of this is the commercial valuation of bran, which, under the old methods of manufacturing flour, readily brought a good price, while at the present day it is about worthless, except as an aid to digestion. I am afraid that, after five hundred years of wrong living, it would take more than three generations of right living to restore the bones to their former strength. I would call the attention of the gentlemen here to their own experience in the office. Frequently they are called upon by natives of Scandinavia, who come to this country with scarcely a cavity in their teeth, but in a short time they melt down like dew.

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* See page 547.

We cannot admit that these people in their own country enjoyed so much higher civilization than we do here, nor can we admit that the differences in food will produce the change in so short a time. To what can we refer it? Dr. Lawrence, of New York, has presented a paper in which he calls particular attention to the fact that it was not a lack of phosphates in the food which caused poor teeth, but rather a lack of assimilation, and that lack of assimilation is accompanied by a general lack of health, and that whatever will promote the general health will help the teeth. And now, in concluding, I will leave this one thought: whether or no our work does not lie in the explanation to the people of the necessity of plainer and more easily digested and assimilated food, and in connection with it, a more natural life during infancy and childhood, and I mean not simply in the nature of the food and dress, but in all that pertains to the life of the child. This would not only build up the teeth, but every portion of the body.

Dr. Leonard, of Minneapolis: In connection with this subject, or something nearly allied to this subject, you know very well my idea given last year. I think there are two facts which pertain to the development of the teeth. The one fact which enters into the development of the jaw and the teeth does not so much enter into the decay of the teeth as do some other things. For instance, I agree with Dr. Stearns in his views regarding the disuse of the teeth, and their relative smallness compared with those of former races, and think this has been brought about by disuse. When you come to the actual decaying of the teeth, I think it is largely owing to the general lowering of the physical organization, and especially that of digestion. The paper itself strikes me very favorably, inasmuch as it tends to widen our views and points in the direction of a larger knowledge of science and of applying it to our own profession. I am very glad to see this sort of work go on, and I therefore commend Dr. Stearns' paper.

Dr. Kulp, of Davenport, Iowa: The subject of this paper is one I have been much interested in in years gone by. I commend the paper in almost every particular, but take exception to the statement that the teeth of the present generation are in a state of deterioration. I do disagree with him there, not only in theory but in experience. The subject of the disuse of the teeth was one that impressed itself upon my mind more than thirty years ago, and I made it a point to impress upon my patients the importance of using the masticating machinery as much as they would any other part of the body if they expected it to develop. For this reason I have never discouraged children from chewing gum, but think that if instead of gum they were to form the habit of chewing grains of wheat it would be much better in many respects, as the grains of wheat would aid digestion. In many cases I have succeeded in establishing this habit, and the result has always been most satisfactory.

Dr. G. W. Avery, Minneapolis: The teeth of the present generation are not retrograding—not going back. I know from my own experience that the teeth are growing better. We are frequently asked by ladies "why are our teeth not so good as the teeth of men?" and since this subject commenced attracting attention some thought it due to the habit of using tobacco. We are often asked if the use of tobacco is good for the teeth, and always answer no; but if the tobacco is not good, still the habit of chewing is all right.

Dr. Stearns in closing the discussion said: I am sorry I did not succeed in making myself better understood. The gentlemen will remember that I divided the phenomena into race development and individual development.

In considering the question of the influence of civilization upon the teeth, individual development has little to do with it. I do not consider poor teeth the legitimate outcome of civilization, but one of the evils of partially developed civilization. I do not think the outcome of civilization is deterioration, but simply change. I distinctly stated that I did not wish to enter into a discussion as to what was the cause of poor teeth, but was it the lack of lime salts in the food?

I would like to thank Dr. Kulp for advocating the chewing of wheat. In regard to the Scandinavians, I think the Scandinavians and Germans have the poorest teeth that I meet with. I have known them when just over, and as a rule I find very poor teeth among the lower classes of people of these nationalities. The higher class generally have very good teeth.

Dr. Weeks stated that although Dr. Stearns' remarks practically closed the subject, he thought the gentlemen present would like to hear a few words from Dr. Harlan, of Chicago.

Dr. Harlan, on being called for, said:

I think we have just as good teeth, better teeth in fact, judging from the observation of a good many thousand cases of my own, than one hundred years ago, and we also have more and better dentists. In my opinion one of the causes of poor teeth is the intermarriage of the different races, and the consequent lessening of the vitality of the teeth by the strong race uniting with the weaker. A good deal of the irregularities of teeth may be traced to the inter-marrying of people of different nationalities, and re-inter-marrying of their descendants.

With reference to the proposition about the first permanent molar, I think he is quite correct.

With reference to the production of a perfect set of teeth in three generations I cannot agree.

About a mile from Sterling, Scotland, is a settlement of original Celts. They have been there a great many years. They never marry out of their own community. They have fine dental arches and their teeth are of good structure. This strengthens the theory that it is the inter-marrying of different races which destroys the teeth.

With reference to the use of the muscles and exercise of all the organs, there is not the slightest doubt but use improves, only it is best not to abuse it. It is the abuse of organs which impairs their value. Now we come to the practical application in the mastication of grains of wheat. There can be no doubt that as an exercise it is highly beneficial, and is also good as a hygienic measure. Care, however, should be taken to thoroughly clean the teeth afterward, or the glutinous substance fermenting around the teeth would cause great damage.

The subject was then passed.

Dr. W. A. Jones, of Minneapolis, then read a paper on "Electricity and its uses in Dentistry*" and illustrated his subject by the use of electrical apparatus.

DISCUSSION.

The discussion upon the foregoing paper was opened by Dr. M. G. Jenison, who said:

Although I did not have the pleasure of reading Dr. Jones' paper before the meeting, the subject was so interesting that I hope what few remarks I may make will bring on a general discussion. Of the subject of electricity we know comparatively little. I agree with Dr. Jones that it has passed its infancy, and also think that the growth will go on until in a few years we will have a giant. I would make this point: In using it we should take into account the different effect it has upon different people. Some become quite happy under its influence, others become drowsy, etc. We see this even in a common thunder storm. In the practice of dentistry the subject is but little understood. Dr. Weeks and myself have experimented with it, having put in the Law battery of 24 cells. The result has been very satisfactory. Some claim they can get as good results without cocaine—I cannot. We have made some experiments in the removal of pulp. Have kept a record of cases during the past two months, and have had only three failures. One thing more: In removing the electrode, be careful to remove the negative first. In placing, place the positive first.

Dr. Brown: I have nothing to say upon this subject for the very best of reasons, but there are many here who have not that reason, and I hope we may hear from those who can tell us more about this subject which is a very important and interesting one to dentists.

Dr. Lyon: I have found it very successful in a number of cases I can cite. I find, however, that electricity in all cases of dentistry is the same as in all cases of everything else; we cannot always depend upon it. In ninety-nine cases out of a hundred it works very well indeed.

Dr. Brown: I would like to ask if any one has tried it in cases where arsenic had been used?

Dr. Jenison: I have used it and found it successful in many cases, not in all.

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* See page 555.

The subject was then passed.

Lawrence P. Leonard, of Waseca, and A. H. Mantor, of Willmar, were elected members of the association.

Dr. A. C. Hewitt, of Chicago, read a paper entitled " The Best in Operative Dentistry."

Discussion was postponed until the Secretary read a paper by Dr. M. B. Wood, of Mankato, entitled " Copper Amalgam."

DISCUSSION.

Dr. Whiting: Would not forcing free mercury through the apical foramen be injurious? A. I have never found it to do any harm.

Dr. L. D. Leonard: It seems to me one would be liable to get the amalgam up above the apex of the root, where it would afterward become hard, with jagged edges, and be a never-ending source of irritation. In regard to copper amalgam, I am glad to learn how it is made. Have tried to make it myself, and failed.

Dr. Hewitt: In reply, I will say that the gentleman will remember that I said that the amalgam which entered the root cavity should be very soft. Being soft, it will readily spread itself smoothly. I have frequently laid the amalgam on the bare pulp, and have never had any difficulty.

Dr. Hill: I most heartily endorse the therapeutic value of the mercurial preparation mentioned by the essayist. So far as the amalgam is concerned, I never took any stock in it myself.

Dr. Hunt: I would like to know how long Dr. Hewitt has used copper amalgam? A. About three years.

Dr. L. P. Leonard: What is the objection to using plastic gold in filling the center of a large cavity? A. No objection whatever. My objection to plastic gold is that it is an impure gold. There are three things which I consider absolutely necessary to make a good root canal filling. First, a filling that can be introduced to the end of the root; second, one that shall keep it in an aseptic condition; and third, that the material used should not be subject to absorption.

Dr. Fullerton: When you make your permanent matrix, do you cement it on the tooth. A. No, not where I can avoid it, for the reason that at the end of ten years or more it becomes saturated with moisture.

[TO BE CONTINUED.]

Wisconsin State Dental Society.

The nineteenth annual meeting of this society was held in Severance's Hall, Milwaukee, July 16, 17 and 18. President W. H. Carson in the chair.

The session was opened Tuesday morning with prayer by Rev. J. L. Hewitt, and after the usual routine business the President read the annual address, in which he urged the necessity for special efforts to increase the membership of the society, pointed out the advantages derived from an annual interchange of ideas, the demand for higher education in the present age, and the possibilities of future scientific investigation.

In the afternoon two papers were read and discussed. Dr. S. Saxe, of Whitewater, read a paper entitled "How Can the Dentist Interest His Patient in the Proper Care of His Teeth," and Dr. F. H. Emmerling, of Milwaukee, a paper on "Reciprocating Motions in Operations on the Teeth."

Wednesday morning was devoted to Clinics, and in this feature of the work showed a decided improvement over meetings of previous years.

Dr. R. W. Lakin, of Eureka, Ill., restored the cutting-edge of a superior central incisor with Watt's crystal gold and Kearsing's blocks, using gold screw posts for retaining and giving strength to the filling. The Hahn pneumatic mallet and duplex engine was used, and the teeth separated with thin steel strips until the filling was completed. The Ivory separator was then used to obtain space for finishing.

Dr. R. F. Ludwig, of Chicago, demonstrated the new Ludwig crown anchor, crowning a central incisor, and using the S. S. W. copper and diamond points in preparing the root.

Dr. J. F. Sneathen, of Baraboo, Wis., gave a very interesting exhibition of malformed teeth; also of pulp calcification, secondary dentine, etc.

Dr. E. B. Call, Peoria, Ill., prepared a root, made and set a seamless gold crown, after his own methods.

Dr. C. P. Southwell demonstrated an idea in using a vulcanizer.

[TO BE CONTINUED.]

Colorado State Dental Association.

The third annual meeting of the Colorado State Dental Association was held in Denver, June 26th to 28th, 1889, at the rooms of the Dental Department, University of Denver. The President, Dr. J. W. Grannis, of Colorado Springs, in the chair.

The following papers were read:

Surgical Treatment of Abscess—J. M. Porter, D. D. S., Denver.

Cocaine Applied to Dentistry—George J. Hartung, D. D. S., Denver.

Alveolar Abscess without Fistula—W. A. Smith, D. D. S., Salida.

Microbes—P. T. Smith, D. D. S., Denver.

Preparation of Cavities—H. A. Fynn, D. D. S., Central.

Anæsthetics, J. M. Norman, D. D. S., Denver.

Exposed Pulps—J. N. Chipley, D. D. S., Pueblo.

Dietetics—Wm. Smedley, D. D. S., Denver.

Clinics were given by—

Dr. S. Davis, Denver—Fusing Bands to Crowns.

Dr. M. A. Bartleson, Denver—Bridge Work.

Dr. J. W. Grannis—Gold Filling.

Dr. W. E. Griswold—Anchoring Bridge Work.

Dr. F. A. Twitchell exhibited a new oxy-hydrogen blow pipe, using gasoline and nitrous-oxide, producing an intense heat. This blow-pipe is especially useful to those dentists not having gas in their laboratories.

The Denver Electric Motor Co. also displayed an appliance connecting the dental engine hand-piece and arm with the Wooley Electric Motor, enabling the operator to control the speed, reverse the direction of the bur, or stop it at will.

The newly elected officers are:

President, J. M. Porter, Denver.

First Vice President, M. H. Smith, Colorado Springs.

Second Vice President, G. W. Milton, Silverton.

Secretary and Treasurer, H. P. Kelley, Denver.

Corresponding Secretary, Chas. F. Dodge, Leadville.

Dr. P. T. Smith was elected a delegate to the American Dental Association. Thirty-nine new members were enrolled, and much credit is due the old officers for their successful efforts in making the meeting so profitable. It was mainly through the efforts of the association that the new State dental law was enacted.

On the evening of the 28th, the Denver members of the association tendered the visitors a banquet at the St. James, Dr. S. Davis acting as toast-master. "Our Profession and Its Interests" were presented in a creditable manner by Drs. Smith, Porter, Norman, Hartung, Smith of Salida, Chipley, Bartleson, and others. The evening was an enjoyable one, and the Denver members were voted royal entertainers.

CHAS. F. DODGE,
Corresponding Secretary.

Leadville, Col.

NORTH DAKOTA STATE DENTAL SOCIETY.

The seventh annual meeting of the Northwestern Dental Association was held in Fargo, North Dakota, August 21–22, 1889.

The routine business of the session included the change of name to "North Dakota State Dental Society," with the necessary changes in by-laws, reception of a number of new members, appointment of a committee to draft a new dental law and endeavor to secure its passage, following the main features of the proposed Illinois law, and selections of names for new Board of Examiners.

Dr. T. E. Weeks, of Minneapolis, was present with drawings and models, and gave several instructive lectures on "Crowns" and kindred subjects, dwelling largely on principles rather than methods.

Dr. M. G. Jenison, of Minneapolis, read a paper on "The Pulp, its Function and Treatment."

Dr. W. A. Spaulding, of Minneapolis, read one on "Anæsthesia," both of which were well received by the society.

The Secretary read a paper from Dr. Louis Ottofy, of Chicago, on "A New Preparation of Crystal Gold," and also one by Dr. W. H. Atkinson, of New York City, "Dentistry as it *was*, *is*, and *should* be," which was regarded so highly by the society that five hundred pamphlet copies were ordered for distribution among the dentists of the Northwest.

"The Use of Gold with Amalgam," a paper by Dr. Bremmer, of Minneapolis, was presented and illustrated by models.

The election of officers closed the business of the most successful meeting ever held by this society.

The following were elected for the ensuing year: President, S. J. Hill, Fargo; Vice President, C. B. Davenport, Devils Lake; Treasurer, H. L. Starling, Fargo; Secretary, J. W. Cloes, Jamestown.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.
PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M.D., D.D.S.,

ASSOCIATE EDITORS:

J. W. WASSALL, M. D., D. D. S.
J. G. REID, D. D. S.
LOUIS OTTOFY, D. D. S.
L. L. DAVIS, D. D. S.

NEWS FROM THE INTERNATIONAL DENTAL CONGRESS.

By a cablegram received from Paris, we learn that the International Dental Congress adjourned, having held interesting and profitable sessions. The Congress was a success, even beyond the expectation of its most ardent supporters. About five hundred dentists, representing nearly all the nations of the world, were in attendance. A committee was appointed to decide on the feasability of holding a second International Dental Congress in connection with the World's Exposition of 1892, wherever the latter may be held. We shall publish full reports of the work of the Congress in succeeding numbers of THE REVIEW.

DENTAL EDUCATION OF THE FUTURE.

This year has witnessed one of the most important advances affecting the history of dentistry in the United States. We refer to the action of the National Association of Dental Faculties and of the American Dental Association, by deciding that the course of dental instruction shall be extended to three years of at least five months each. This step is more important, far-reaching and effective than it appears to be at first blush. Our educational methods and systems have been ridiculed, belittled and criticised in a measure wholly unjustified by the true condition of affairs, even within the last five years. The impression seemed to prevail in many sections, especially abroad, that students are graduated at American dental colleges regardless of anything, and almost at any period of their student life they may choose for themselves. After a few years of the practical, strict and faithful adherence to a three-years' course of study in all of the dental colleges of the United States this impression will be obliterated. This is the best method of attaining that high standard which the dental profession has so long striven for. We predict much benefit to the profession from this action, and, considering it a most important step of advance, trust that all the dental colleges will adopt and enforce its strictest observance.

American Dental Association.

The late meeting of the American Dental Association at Saratoga Springs, N. Y., proved the fact that in the lives of associations as well as individuals, there are times of depression and inactivity. In other words, this was an "off" year. The meeting was not so successful as is usually the case; about one hundred dentists were in attendance, and compared with the great joint meeting at Louisville last year the attendance seemed small indeed. Many reasons led to this condition. The meetings of the Associations of Faculties and Boards of Examiners, which held more sessions and longer ones than usual, kept many of the best men away from the meetings. Saratoga is too far east, and both the expense of the trip and the hotel rates are too high to call out any large numbers from the west. The comparative inactivity of the officers of the sections had much to do with it.

However, we are now ready for a large, successful meeting next year, a meeting that shall eclipse all previous efforts, one that should call out the best element of the east in large numbers, and who will be anxious to visit the important western City of Kansas, near which we meet. The West, of course, will be there, and the South and the far West ought also to be well represented. We would make this suggestion to the officers of the various sections, that they at once proceed to the laying out of a plan of action, that their energy shall not be delayed until the last moment. That they should prepare good reports, and under no circumstances allow their section to be passed without offering report.

We heard that the association "had had its day," "had accomplished its work," "that sections of medical societies will take its place," etc. We trust that this influence will not spread,—that no effort will be made to place anything in the way of a successful meeting next year. The American Dental Association has done much good in the past, its days of usefulness have only commenced, and the united, active interest of all of its members will make it the source of unmeasured benefit to the profession of the future. The meeting at Excelsior Springs, Missouri, in August, 1890, should be made a big, rousing, true Western success.

DOMESTIC CORRESPONDENCE.

A Reply to Dr. Case's "Criticism."

To the Editor of the Dental Review:

Dear Sir—In lieu of a letter on local matters this month, permit me to reply to the "Criticism" of Dr. Case in the May issue.

At the outset of his article that gentleman makes use of the words "Christian Science." I am pleased that he has heard of this fad, and hope that the kindred words "Christian Charity" will reach his ears by the time this makes a "sensation" on his optic ganglion, resulting in "perception" and "conception." It would seem that when he attacked me he had not as yet heard of Charity of any kind, for by quotations of parts of sentences and wild deductions from typographical errors he has builded a tower which is meant to crush me in its fall.

He chooses the words "pain is largely dependent on the mental altitude toward the parts attacked," and with rare editorial skill suggests that "attitude" would be nearer the case, in applicability. This is true, but might he not have given me credit for that word, charging the alteration of a single letter to the printer's devil? I suppose I must be grateful that he did not accuse me of "dentinal fabrilis," the word "fibrils" being so misspelled five times on one page. Surely five times should convict me and exonerate the type-setter. Then, again, how is it that he passed over such horrible English as "soothing the tears," and, further on, the senseless phrase "on gold rather than tooth services." Or, was it that a warm blast of air from the Atlantic coast wandered so far west and reached and softened his heart, at the same time clearing his brain so that he could see that the poor ignorant author (who does not know that mental philosophy has been "rounded into a science,") may possibly have meant "stopping" in place of "soothing," and "surfaces" rather than "services."

The doctor expresses surprise that my paper has been unchallenged so long; his surprise will pass when he stops to consider that few, if any, in the profession who read it considered it of sufficient importance to devote nearly a year of study in "that special and distinct field of thought, which has been developed and rounded into a perfect system of mental philosophy," and to delve into the depths of Fiske's "Cosmic Philosophy," and Spencer's "Synthetic Philosophy," merely to refute a few words of mine which are not stated in the article as *facts*, but merely alluded to as *probable theories*, it being *admitted that they are unproven*. As Dr. Case, however, seems to have done this, I must thank him for the compliment he has paid me in devoting ten months of valuable time to my ignorant utterances.

And yet, on the whole, he seems to have not gained greatly by this study, since after all these months he cannot understand a sentence which did not bother the mentality of the New Jersey boys at all. Possibly the rarified atmosphere of Michigan makes it difficult for him to descend to my lower plane. Here is the sentence: "Pain is considered to be unpleasant sensation, using the word as the antithesis of ideation." After quoting this the doctor says: "We know without being told that pain is unpleasant sensation." I am delighted that at least he understood so much, and I may say *en passant*, that I expected the Jersey boys to show the same perspicacity, nor was I disappointed. The words were used not to express a discovery, but a known fact. If Dr. Case will confine his language to discoveries alone possibly he may find less to write about, especially if the discoveries be his own. This is not meant as a discourtesy, but simply a logical truism. His mind, however, becomes dazed before the depth of the rest of the sentence, "using the word as the antithesis of ideation," and he regrets that I make "no further attempt to continue the line of thought, etc."

Well, Dr. Case, let me say that however difficult it may be for men in high altitudes (not "attitudes," please mister printer, as I want to show that I know the difference between these words) to comprehend my meaning, it is seldom obscure to myself. Therefore I will endeavor to expound.

I have not read "Cosmic Philosophy" nor Spencer's work, and do not care to take a year to do so before writing this reply. In the few days which have passed since the DENTAL REVIEW reached me I have not had time even to look over the works in question. I have, however, about a dozen books on kindred subjects in my library, and had my ideas of sensation and ideation from them.

The word "sensation" has a scientific meaning, which is, as I phrased it, "the antithesis of ideation;" at the same time it is commonly used by the laity in places where the latter would be more exact, as for example: "I have a *sensation* of cold," meaning really an "*ideation* of cold," the feeling being imaginary. Therefore, in using it in the definition of pain, I stated that I did so in the scientific bearing only. This, simply to be exact, and with no thought that on so slight a foundation would so eminent a man as Dr. Case declare that the whole paper is worthless.

Sensation is the result of an objective impulse. Ideation, its antithesis, springs from a subjective cause. For example: I gaze at Dr. Case with the result that his image is reflected in the lense of my eye; this starts an impulse of nervous force (whatever that is) along the optic nerve to the optic ganglion, thence to the brain, producing *per*ception, and, if educated up to that point, *con*ception of the fact that it is Dr. Case who stands before me. This is a *sensation.* Now, then, *having had this experience,* suppose that I receive this copy of the DENTAL REVIEW with Dr. Case's scathing criticism against me, what more natural than that, from within the store-house of my recorded *con*ceptions and *per*ceptions I should summon up the image of Dr. Case? What happens? This mentally born impression passes from the optic ganglion along the nerve, to the lense, and is projected from me to a distance, so that I *see* (with emphasis on the word see) Dr. Case as plainly as before. But this is *ideation.* This is subjective. Sight, or the visual object, is the same in each instance. Moreover, the result in both cases depend primarily on a real object. One born blind can have neither ideation nor sensation of the form of man. But one who has enjoyed sight, and is then blinded may have ideations but not sensations of form. The only difference then is that one is subjective, and the other objective; in one the object is not present, in the other it is. Dr. Case says "a tree falling in a forest a hundred miles from any ear would produce no sound," and since no one can go there and find out, his position is indisputable. May we say similarly that if Dr. Case stood in a forest a hundred miles from any eye, he would not exist as a visible body? That sounds awkward, does it not?

The doctor makes a few more quotations from my paper which he proceeds to dissect in such a manner that I begin to wonder whether he really read those mental philosophy works or has only heard of them. But no, he quotes from one. He wanders over more than a page in argument that a nerve is not a center of sensation, and finally has to admit that "he probably means to assert that nerve fibres are the only medium of communication between the brain and the primary cause of sensation, etc," which goes to show that the doctor understands me better than he wishes to admit.

In another place he suggests that I use simple intelligible language, and after raking me over the coals for what I say of the cause of sensation in teeth, he explains his own views in the following gloriously simple terms: "But what do we produce as an initial condition? Probably an exalted vibratory motion of the particles of matter in some complex medium contained within the dentinal tubes, which may or may not be nerve fibre or nerve substance proper—I maintain there is no subjective reason for believing it is either—or anything more highly organized than differentiated protoplasm, which possesses the inherent property of transmitting vibrations—or some form of force—to the peripheral nerve-endings of the pulp." It is just possible that that is good Michigan English, but as I first read it it reminded me of that epigrammatic definition which says "language is a system of symbols wherewith man conceals his thoughts." When I read it a second time it made me think of a patent which in its specifications endeavors to occupy the whole field, so that no one coming after may offer any original thought. After re-reading my own article, which of course I had forgotten, on recurring to this sentence the idea enters my mind that in this the doctor means a concealed compliment; for it is practically my whole thesis boiled down. But it has suffered in the process, for whereas I quoted from authorities to give a comprehensive view of prevailing theories, Dr. Case has the whole thing in a nutshell and claims it for his own nut, whereas it is a chestnut. Has that phrase reached Michigan?

Let me show the audacity of this statement. First it admits that the contents of the tubuli may be nerve fiber, then expresses the belief (*without proof*, as he charges I have done) that it is protoplasm, then that this protoplasm has an inherent property of transmitting vibrations, and then concedes the possibility that it is some kind of force which is transmitted. Now what kind of force is it? Nerve force? If that is the idea he winds up where he began, by admitting what he denies.

Now look at the sentence from the standpoint of histology. In one breath he says the tubuli contain a "complex medium," and then that it is "not more highly organized than differentiated protoplasm." All we can make of that is that the contents are protoplasm which is differentiated and organized into a complex medium, and I confess I have not breathed enough of Michigan's rarified atmosphere to assimilate that and get at the grain of sense which it may contain. What does he mean by a protoplasm which is differentiated? And what is a complex medium which is not highly organized? Possibly I am an ignoramus, but I understand protoplasm to be a word difficult to define. Presumably it is "the elementary form of living matter." But from its derivation it would mean "first formed" (*protos*, first or primary, and *to plasma*, the formed.) Now, then, if Dr. Case means by protoplasm matter which has advanced from the elementary stage, it is already differentiated, and further differentiation would mean organization, and that organization should be fitted with some special term if he would have us know what he understands the tubuli to contain. This of course is speaking of protoplasm from Heitzman's standpoint. If, however, he believes in the cell doctrine and by protoplasm means the elementary amœboid bodies, as soon as there is differentiation, he can no longer speak of it as protoplasm. With either understanding of protoplasm, therefore, his definition is very crude, and we are no wiser than before as to the nature of the contents of the tubuli which are seemingly the media of the transmission of pain.

I must give the doctor one nervous nut to crack, by vibration.

He says that when a sensitive tooth is touched it responds in consequence of the vibrations of a complex medium, which may or may not be nerve or protoplasm, etc. However, he is quite sure about the vibrations. (Tomes disagrees with him, but that is of no consequence.) Very good. Take a molar tooth with a large crown cavity filled with leathery decay, which, however, has not reached the pulp. Why is it that *pressure downward*, or *toward* the pulp, to be more explicit, does not cause pain (through vibration), whereas *lifting* the decay *up* and *away* from the pulp causes extreme torture? Why is it that scraping with spoon excavators immediately over the pulp (cutting across the complex medium, etc.) does not produce as much pain as cutting next to the enamel, at what may be termed the circumference of the floor of the cavity, at the point most distant from the pulp?

Will the doctor also please overhaul his Fiske and Spencer and explain to my dull comprehension what he means by a "subjective reason" or what kind of reason that is which is not subjective? Also with what microscopic powers he is enabled to discern the "peripheral nerve-endings of the pulp?" I thought the pulp to be mainly myxomatous tissue, and it is a surprise to me to learn that it terminates in peripheral nerve-endings.

Yours Truly, RODRIGUES OTTOLENGUI.

NEW YORK, 115 Madison Ave., May 18, 1889.

FOREIGN CORRESPONDENCE.

LETTER FROM LONDON—AMERICAN DENTAL SOCIETY OF EUROPE.

To the Editor of the Dental Review:

DEAR SIR—The most prominent thing of a professional nature that has transpired on this side of the Atlantic of late, was the meeting of the American Dental Society of Europe, held August 6th and 7th in Paris in the salon of Dr. du Bouchèt, No. 8 Boulevard des Capucines, and to whom in no small degree is to be attributed the success of the meeting.

In point of numbers and in respect to work done during the session, it is considered one of the most successful meetings ever held by the society, about forty dentists being in attendance. Among the visitors we noticed Drs. Bonwill, of Philadelphia, and Warrington Evans, of Washington, D. C.

Five or six names of candidates for membership were presented, and acted upon.

The President, Dr. St. Geo. Elliott, of London, called upon the following members for their contributions, as per programme:

Dr. Miller, of Berlin, who spoke in his usual masterly manner of "Pathological Conditions in Ivory," showing a very valuable collection of specimens, each of which was considered at length; "Pathogenic Bacteria of the Mouth," a subject of special investigation, by Dr. Miller, was admirably presented. "Antiseptic Properties of Filling Materials" was also presented to advantage. "Histological Studies by Aid of the Optical Lantern" proved an interesting portion of the programme, the micro-photographs being exceptionally good.

Dr. Sachs, of Breslau, exhibited a skull, upon the teeth of which was a demonstration of most operations that the profession is called upon to perform. This specimen spoke volumes for the care and skill, and interest in the society taken by such a busy man as its elaborator is.

Dr. Patton, who by the way forsakes the post of Secretary to fill that of President, read a paper full of good points upon "Combination Fillings and Eclectic Practice."

Dr. Bryan, of Basel, who so long has held the office of Treasurer, and who firmly believes a man should be a worker, has accepted the secretaryship; he spoke upon his new method of recording dental operations in a facile manner. He also presented many new and useful inventions for consideration, a hot air syringe being an exceedingly good thing, and his pneumatic mallet, which is so constructed as to be available upon any engine, being also a good thing.

Dr. Mitchell, of London, in the absence of Dr. Haskell, spoke upon Continuous Gum work, strongly advocating a closer acquaintance on the part of the profession with this valuable aquisition to our prosthetic *repertoire;* he also read a paper on "Crown and Bridge Work," the tenor of which was that this valuable work was being debased by the advertising charlatans and those whose diagnostic incapacity and fundamental mechanical ignorance were their most characteristic attributes. Dr. Mitchell showed several novelties, of use to both operator and plate-worker.

Dr. W. St. George Elliott spoke of the merits of antifebrine in periodontitis, new amalgams, new pivot, new impression material; and he also showed a very ingenious reducing valve for controlling gases under high pressure.

The papers were good, and it was the verdict of the meeting that the time for discussion upon them was too short. The next session will undoubtedly extend over three days.

Dr. Bonwill spoke upon several topics, which he handled in his usual able manner.

Dr. W. Evans showed some of his work in celluloid, for which he has so long been noted.

The social part of the programme was not the smallest feature of the session. Our brethren practicing in Paris by their generous hospitality showed a reckless disregard of inducing gout and dyspepsia in their visitors in a manner that was positively alarming.

The session closed with a dinner in the Eiffel Tower, at which about fifty sat down. The company were gratified by having Dr. Evans, the pioneer of American dentistry in Europe, as their guest at the banquet.

Thus closed a meeting essentially a success, considered from whatever standpoint.

The next meeting of the society will be held in Heidelberg, when Dr. Davenport, of Paris, will manipulate the gavel in the capacity of his presidential office. "78."

London, August 10th, '89.

REVIEWS AND ABSTRACTS.

OUR TEETH. A familiar treatise. Published by the Illinois State Dental Society.

While this little pamphlet, intended for general distribution and circulation among patients, is one of the best of that kind of literature that has come to our notice, it is nevertheless open to some criticism, and this is made in the form of suggestions to enable the committee in the future to improve upon the excellent work already accomplished. In the first place, 30 pages, though quite small and concise, are really too much for most readers; the probability is that patients will lay the book to one side to read it at a leisure moment, which generally never comes. The committee has undoubtedly endeavored to condense as much as possible, and perhaps the objections could be overcome by the printing of separate leaflets or extracts, to be given to patients as their special case may demand. It would be best to impress on some the necessity of frequent examination of the teeth BY THE DENTIST, while others may need a forcible reminder of the necessity of constant cleanliness. Then again to many the portions relating to artificial teeth are wholly unnecessary, while some who wear substitutes, are sadly in need of a good chapter on "How to keep artificial teeth clean."

We would suggest that for future editions, more perfect cuts be prepared; while those used in the work perhaps answer the purpose, there are much better ones. The terms "canine" "eye-tooth," "sixth-year molars," "twelfth-year molars," and "wisdom tooth" should be allowed to become obsolete. Those dentists whose patients can be improved and educated in this way, ought to purchase these books and in distributing them, should mark those portions of the work which would be of the greatest benefit in each particular case.

DENTAL CHEMISTRY AND METALLURGY, being the second edition of the Dentist's Manual of Special Chemistry, revised, rewritten and including: 1. Essentials of chemistry for dental students. 2. General chemistry for dental practitioners. 3. Laboratory course in elementary chemistry for dental students. 4. Laboratory course in dental chemistry and metallurgy. By Clifford Mitchell, M. D., Chicago: W. T. Keener, 96 Washington Street, 1890. Price $2.50.

That a second edition of Dr. Mitchell's book has so soon followed the first one, is of itself a significant fact. This volume is one of the Dental College series of text books. It is one of the few books which deserves the highest commendation, no matter what the standpoint of the critic may be. In its general makeup, typography, paper, binding, &c., it leaves nothing to desire. In all these respects it is perfect. The type is large and clear, the subject matter being so printed and arranged as to attract the attention of the student and to fix in his mind the principles and facts which are most essential.

The table of "Errata," which never ought to be part of a printed book, has been omitted, and in its place we find a useful glossary. The chapters on Physics and Chemical Philosophy are exhaustive, and appropriate prefaces to the excellent succeeding chapters on inorganic and organic chemistry. The arrangement of the chapters on practical work in dental chemistry and the dental laboratory are admirable. A complete course of salivary analysis is followed by a glossary and a well arranged index.

Dr. Mitchell has done his work faithfully; he has wonderfully improved on the first volume, and in so far as a dental college text-book is concerned we believe this to be deserving of general adoption in the colleges of this and other English-speaking countries. The practitioner who desires to be familiar with many of the practical questions of dentistry cannot afford to be without this edition.

BOOKS RECEIVED.

REPORT OF THE COMMISSIONER OF EDUCATION FOR 1886–87. By N. H. R. Dawson, Commissioner. Washington: Government Printing Office, 1888.

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To the Editor of the Dental Review:

DEAR SIR.—Will you please request some of your correspondents to explain the reason why it is that so often patients complain of tickling in the nose while the teeth are being operated upon. Is it due to some reflex nervous action?

Yours respectfully, C. H. D.

Chicago, September 3, 1889.

[In all probability the peculiar and sometimes annoying sensation, referred to by C. H. D., is due to the movement of the hairs within the nostrils and the tickling which results therefrom.—ED.]

PRACTICAL NOTES.

A PECULIAR CASE.

Several years ago I extracted three molar teeth under some unusual conditions that I will not undertake to explain, but will simply state the facts, leaving the reader to form his own theory to account for the facts if he chooses to do so.

Two ladies came to my office, one of whom I knew by name, but I had no acquaintance with either of them. The one whose name I knew, Mrs. A., wished to have some troublesome teeth extracted. On examination I found three upper molars badly decayed, and she decided to have them out.

As I took up my forceps she said, "Wait a minute," and fixed her eyes upon the top of the window before which she was sitting. In about two minutes or less the person who came with her said, "She is ready now." It suddenly occurred to me that I had heard this woman spoken of as a spiritualist, and that this was some preparation to avoid the pain of extraction. Upon this thought I determined to watch carefully to see if her precaution, if such it was, was effectual.

I proceeded carefully and deliberately to extract the three teeth. I could not detect the least sign of pain, not the quiver of a muscle, she seemed as insensible as a piece of wood, and yet when I told her to take some water and rinse her mouth she did so without hesitation and in an apparently natural condition.

I asked her if I hurt her much, she said, "Not at all." I did not feel at liberty to question her further.

This patient was about fifty years old, and her countenance would give the impression of a thoughtful and intelligent person, but I think, from her social situation, she could not have had much education.

The lady who came with Mrs. A. sat on a lounge on the opposite side of the room directly behind her, so that there was no apparent communication between the two.

When I say I could detect no sign of pain during the operation, I mean it in the fullest sense. If any one can explain this method of preventing suffering so that it might be made generally available, it would place us beyond the need of using anæsthetics which are yet very unsatisfactory in dental operations. NEMO.

MEMORANDA.

Dr. N. W. Kingsley is in Europe.

Charles Spence Bate, F.R.S., L.D.S., is deceased.

Dr. Wm. G. Allen, of Georgia, died at Birmingham, Alabama.

Dr. Fiske Fay, an old and respected dentist of Brussels, Belgium, is deceased.

The fifth annual meeting of the Ohio State Dental Society will be held at Cleveland, Ohio, October 30, 1889.

Sir John Tomes, F. R. S., was the Honorary President for Great Britain at the late International Dental Congress.

M. Wiesner, Vice-President of the General Dental Association of France, has received the cross of the Legion of Honor.

We are compelled, for want of space, to hold over a number of interesting papers which should have been published this month.

Edinburgh, Scotland, is to have an electrical exhibition in 1890, and a special section is to be set aside for dental and medical electrical appliances.

M. A. Ch. Rozet, who has practiced as a mechanical dentist in Paris, France, since 1854, has received the meritorious decoration of the Medallion of Honor.

Among the papers read at the late International Dental Congress were the productions of dentists of Greece, Switzerland, Austria, the United States, Great Britain, France, Germany, Holland and Russia.

The Pharmacists of Chicago, feel confident that the meeting of the National and the International Pharmaceutical Associations will be held in Chicago in 1892 if it should be the nation's chosen site for the World's Fair.

Drs. L. D. Shepard, H A. Parr, E. Parmly Brown, Chas. L. Hungerford, J. B. Newby, J. A. Swasey, E. B. Ward, G. A. Christman, A. W. Harlan, J. W. Wassall and others, attended the International Dental Congress.

The tenth International Medical Congress will meet at Berlin, Germany, on Monday, August 4th, 1890, and be in session until August 9th, It is hoped that dentists generally will attend the section on Oral and Dental Surgery.

Drs. W. W. Allport, G. H. Cushing and A. W. Harlan have been appointed a sub-committee by the finance committee of the World's Fair of 1892 for the purpose of raising funds among the dentists of Chicago and the West.

A certificate of incorporation has been issued by the Secretary of State of Illinois to Howard C. Magnusson, Dorsey W. Richardson and John P. McDowell for a dental college to be known as the "Chicago College of Dentistry."

The *Journal of the British Dental Association* heard that "rumors are floating in the air that an attempt will be made to make the Dental Congress an annual affair," and says that this would be an "ill-advised scheme." The DENTAL REVIEW fully agrees with the *Journal*, and hopes that no such an attempt has been made.

In the membership of the late International Dental Congress the following are some of the countries represented:

France, Spain, Argentine Republic, Belgium, Roumania, Turkey, Germany, Prussia, Alsace-Loraine, Holland, United States, Greece, Brazil, Ireland, England, Austria, Hungary, Poland, Portugal, Russia, Italy, Switzerland, Island of Madeira, Sicily, Grand Duchy of Luxembourg, Cuba, Scotland, Sweden, Norway and Denmark.

The Northwestern Dental Association which formerly embraced the eastern portion of Dakota, the western part of Minnesota and the Province of Manitoba, has changed its name to the North Dakota State Dental Society, and will hereafter confine itself within the bounds of the prosperous State of North Dakota. Those members of the old association who practice outside the State have been retained as members by being placed on the new society's roll of corresponding members.

John A. Crawford, a traveling salesman for the meat-packing firm of Blooming, Wolf & Co., of Quincy, Ill., while taking a drink of water swallowed his false teeth. Crawford was on a freight train at Jamestown, just west of Trenton, Mo., when the accident happened. The train was stopped, and, after an hour's vain endeavor to recover the teeth, the patient was brought to Trenton, where Drs. Madden, Henrickson and Patton made an examination and pronounced it a very serious case. Crawford's throat and chest were terribly swollen and inflamed, and his case was a critical one. Owing to the swollen condition of the patient's throat the doctors were unable to locate the plate, and it was feared he would die. Mrs. Crawford was notified, and arrived only in time to see her husband die.—*Exchange.*

A TOOTH FROM A MAN'S NOSE.

A peculiar piece of dentistry was performed yesterday, by which a tooth was extracted from William Barnhart's nose. Mr. Barnhart was kicked by a horse sixteen years ago, and some of his teeth were knocked out of place. When he had recovered from the injuries resulting from the kick he was troubled with a dull headache, which has scarcely ceased a day since that time. He also had a distressed feeling in the upper portion of his nose, and supposed that he was suffering from catarrh. In course of time he discovered what he thought was an extra piece of bone, and a doctor dug out one of the teeth. Since that time he had been troubled still more. There was still another tooth that had grown lonesome, and longed to get out. Drs. Condon and Cook yesterday undertook the job of arresting the roving tooth, which had gathered little moss, and captured it. This is probably the first record of a tooth being extracted from a person's nose.—*Ogden* (*Cal.*) *Commercial.*

A SERIOUS TIME.

Put away the beefsteak, Mollie ;
  Chop the cutlet into hash ;
Turn the solids into salads ;
  Crush potatoes into mash ;
Bake the rice in little patties ;
  Have the mush with dressing mixed,
For the hour is fraught with danger—
  Papa's teeth are being fixed.

Mix the festive pancake batter ;
  Chop the lobster into bits ;
Fry the soft and plastic doughnut,
  That the grinder never grits ;
Cut the bread in yielding slices,
  Lay an oyster in betwixt—
Banish all the pleasant solids—
  Papa's teeth are being fixed.

—*Ann Arbor Chronicle.*

DENTAL EDUCATION.

In considering ill-advised and injurious dental work done, sight should not be lost of the commendable advances made in dentistry during the past fifty years. And whatever may be said in respect to meddlesome treatment of the teeth, especially carious teeth, now so much in vogue, it is largely due to the indifference of the profession toward oral surgery. It is true that medical men have taken up the study of the teeth, from time to time, and have, by their labors, very much advanced dental anatomy and pathology; but it is not to the acquisition of medical knowledge that dentistry is indebted to the development of clever handiwork, but to the special smithcraft of recruits, coming from the ranks of metal workers and other skilled mechanic arts.

So long as dentists are wanting in surgical knowledge, unattainable without due course of study, and surgeons taking up this profession are unable to acquire the practical mechanical skill requisite in dentistry, the status of dentists must needs remain undecided, for its recruits come from these extremes.

It would seem that the sooner a greater knowledge of oral surgery than generally prevails is made a requisite for graduation by medical schools, the better it will be for all concerned. But this cannot be accomplished by the establishment of dental colleges alone, for oral surgery differs from no other specialty in respect to requiring medical training. Unfortunately, however, for the inauguration of any measures of reform in this direction, the apathy so long existing in the profession as regards the subject has practically excluded this branch of surgery from the domain of medicine, greatly to the disadvantage of those who are called upon to treat neuroses arising from diseases of the teeth. If medical colleges undertake to educate dentists, it would be well to bear in mind the necessity for thoroughly equipped laboratories, in which metal working may be taught.—*Samuel Sexton, M. D., in the Medical Record.*

HAYDEN DENTAL SOCIETY.

The Hayden Dental Society, of Chicago, will meet at 5924 Honore street, Englewood, on Monday evening, September 16, 1889, at 8 o'clock.

A. J. OAKEY, Secretary.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The Illinois State Board of Dental Examiners will meet on Monday, September 16, 1889, in the State House at Springfield, at 10 a. m. Candidates for examination will present themselves before 2 p. m. of that day.

C. STODDARD SMITH, Secretary, 103 State street, Chicago.

NORTHERN ILLINOIS DENTAL SOCIETY.

The Northern Illinois Dental Society meets in Sterling, Wednesday and Thursday, October 16th and 17th. Most of the members will find it convenient to arrive Tuesday evening. Headquarters will be at the Galt House, a first-class hotel. We have a good programme, and extend a general invitation.

T. W. BECKWITH, Sec'y, Sterling, Ill.

AMERICAN DENTAL ASSOCIATION.

The following named were elected officers for the ensuing year: President, M. W. Foster; First Vice-President, A. W. Harlan; Second Vice-President, J. D. Patterson; Recording Secretary, Geo. H. Cushing; Corresponding Secretary, Fred. A. Levy; Treasurer, A. H. Fuller; Executive Committee: W. W. Walker, S. H. Guilford and S. G. Perry; Publication Committee: Geo. H. Cushing, John S. Marshall and W. C. Barrett.

MINNESOTA STATE DENTAL ASSOCIATION.

The officers of the Minnesota State Dental Association for the ensuing year are: Dr. G. V. I. Brown, Duluth, President; Dr. L. C. Davenport, Moorhead, Vice President; Dr. H. M. Reid, Minneapolis, Treasurer; Dr. C. H. Robinson, Wabasha, Recording Secretary; Dr. M. G. Jenison, Minneapolis, Corresponding Secretary. The next annual meeting will be held at Minneapolis in 1890.

M. G. JENISON, Corresponding Secretary.

SOUTHERN DENTAL ASSOCIATION.

At the meeting of the Southern Dental Association at Galveston, Texas, the following officers were elected for the ensuing year: President, Dr. John C. Storey, Dallas, Texas; First Vice President, Dr. B. Holly Smith, Baltimore, Maryland; Second Vice President, Dr. Gordon White, Nashville, Tennessee; Third Vice President, Dr. E. E. Spinks, Meridian, Mississippi; Corresponding Secretary, Dr. D. R. Stubblefield, Nashville, Tennessee; Recording Secretary, Dr. M. C. Marshall, Little Rock, Arkansas; Treasurer, Dr. H. E. Beach, Clarksville, Tennessee. Atlanta, Georgia, was selected as the next place of meeting.

MISSOURI STATE DENTAL ASSOCIATION.

The twenty-fifth annual meeting of this association was held at Pertle Springs, Warrensburg, Mo., July 9, 10, 11, 12, 1889, and the following officers were elected for the ensuing year: President, Dr. Henry Fisher, St. Louis; 1st Vice President, Dr. J. D. Patterson, Kansas City; 2d Vice President, Dr. J. P. Gray, Sedalia; Recording Secretary, Dr. John G. Harper, St. Louis; Corresponding Secretary, Dr. William Conrad, St. Louis; Treasurer, Dr. James A. Price, Weston; Executive Committee, Dr. J. F. McWilliams, Mexico; Dr. W. L. Reed, Mexico; Dr. W. H. Buckly, Liberty. Board of Censors, Dr. L. M. Nicholson, Fayette; Dr. J. W. Whipple, St. Louis; Dr. J. G. Hollingsworth, Platte City. Committee on Ethics, Dr. N. H. Gaines, Independence; Dr. I. D. Pierce, Kansas City; Dr. C. V. Huff, Knob-Noster, Publication Committee, Dr. H. S. Lowry, Kansas City; Dr. W. E. Tucker, Butler; Dr. E. W. Stevens, Cameron. Law, Dr. James A. Price, Weston. Supervisor of Clinics, Dr. D. J. McMillen, Kansas City. The next annual meeting will be held at Pertle Springs, Warrensburg, Mo., the first Tuesday after July 4th, 1890.

WM. CONRAD,
Corresponding Secretary.

321 N. Grand Ave.

DENTAL PROTECTIVE ASSOCIATION.

The unenviable position of defendant in a $60,000 damage suit has been accorded Dr. J. N. Crouse, of Chicago, by the International Tooth Crown Company. The suit has grown out of the work of Dr. Crouse in behalf of the Dental Protective Association of the United States. The readiness with which the American Dental Association and individual members at once subscribed a defense fund, serves as an indication of the feeling of the entire profession in this matter.

Dr. Crouse accomplished a great deal for the Dental Protective Association at Saratoga. Quite a number of dentists were enrolled on the list of membership.

The American Dental Association unanimously adopted the following resolutions.

"In view of the injustice which the profession has sustained in the past, as well as the annoyances to which it may be subjected in the future, and fully appreciating the arduous and important labors of Dr. J. N. Crouse, of Chicago; be it

"*Resolved*, That Dr. Crouse is entitled to the earnest support of every dentist in the United States; and further be it

"*Resolved*, That the American Dental Association fully approve of the formation, of the plans and methods of the Dental Protective Association of the United States, and pledge to it our united and continued support and moral aid."

SOUTHERN ILLINOIS DENTAL SOCIETY.

The fourth annual meeting of the Southern Illinois Dental Society will be held in the city of Alton commencing Tuesday, October 15th, 1889, continuing three days. The Executive Committee are engaged in preparing an interesting programme. The time of meeting has been changed from spring to fall in order to secure a better attendance. Attend the meeting, and let us make this the best meeting the society has ever held. Executive Committee, G. A. McMillen, Alton; J. J. Jennelle, Cairo, A. D. Finch, Anna. L. T. PHILLIPS, Secretary.

In sending out the invitations for contributions, the Chairman of the Executive Committee of the Southern Illinois Dental Society says:

"The time for holding the Southern Illinois Convention is drawing near. I am sure you are interested in having a good meeting, and will contribute a paper or clinic. Do not say no, for we want each member this year to do something.

"If you find on the within card any subject you would like, please mark it, and return the card or write to me at once, as the time is limited. Do not confine yourself to the subjects mentioned on the card. Any subject pertaining to dentistry will do." On the accompanying card the following subjects are suggested:

Adhesive Gold Filling.
Amalgam "
Abscess. { Chronic, Acute, Fistula.
Artificial Dentures of any kind especially desired.
Subjects will be furnished for practical cases.
Soft Gold Filling, Clinic.
Gold and Platina Fillings.
Combination Fillings, Gold and Tin, Gold and Amalgam, etc.
Pulp Capping.
Destruction of Pulp by Arsenic or otherwise, and after-treatment of Tooth.
Extraction.
Diagnosis.
Dental Medicines.
Implantation and Extraction.
Pyorrhœa Alveolaris—Cause and Treatment.
Tartar—Cause and Prevention.
Cleft Palate—Cause and Mode of Relief.
Gold Plate, Clinic.
Crown Work, Porcelain especially desired.
Bridge Work.
Influence of Temporary Teeth upon the Permanent Set.
How to Choose an Artificial Tooth.
Irregularity—Cause, Treatment.
Root-Filling, Clinic.
Cleaning Teeth, Clinic.
Cement Fillings—When used.

THE

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ORIGINAL COMMUNICATIONS.

ABRASION AND EROSION.*

BY DR. C. H. ROBINSON, Wabasha, Minn.

Webster defines the word Erosion as "the act or operation of eating away, corrosion, canker; the word Abrasion as "the act of wearing and rubbing off, also substance worn off by attrition," and the word Denudation as "the act of stripping off covering, a making bare."

These words are used in Dentistry to denote a loss of tooth substance by some process other than that known as dental caries.

There are two distinct and entirely different ways in which this loss of tooth substance may take place. One is undoubtedly caused by the mechanical rubbing or wearing of the teeth of one maxilla against those of the other. The word "abrasion" seems to define this process better than any other word of the English language, and I believe is so used by our best writers. That gradual and unknown process by which one or more of the anterior teeth suffers loss of substance on the labial surface, also occasionally on the whole cutting edge, seems best defined by the word "erosion," an eating away. Some writers, however, call this loss of substance on the labial surface denudation, and that on the cutting edge chemical abrasion. In this paper, however, I shall use the word abrasion to express all loss of tooth substance caused mechanically by rubbing and grinding the teeth together, and the word erosion to express all other loss, whether on labial or approximal surface, or cutting edge, not caused by dental caries.

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* Read before the Minnesota State Dental Association.

We all know that the teeth once fully developed are not repaired to any great extent by nature, and any loss of substance, whether by mechanical means, erosion or dental caries is permanent. We expect a certain amount of natural wear year by year, and so do not expect the teeth of those advanced in life will have the same tuberculated cutting edges and sharp cusps which are to be seen in the teeth of the young. But when we see the teeth, even occasionally, of comparatively young people, worn down so that from one-quarter to nearly the entire crowns of the incisors are gone, and the cusps of the bicuspids and molars so worn that these teeth present flat grinding surfaces, we may know that there is something abnormal either in the teeth themselves or in their arrangement. How often have our patients told us of the man who has double teeth all around, which we recognize as simply a case of abrasion.

Although there may possibly be a few cases of abrasion due to the teeth themselves being deficient in quality, yet in nearly every case we can trace the cause to the arrangement of the teeth, and maxilla—the articulation.

In the normal articulation the superior incisors overjet the inferior ones, and the cusps of the posterior teeth articulate with the sulci of the antagonizing teeth. With such an articulation we find it impossible to move the inferior maxilla forward, or to either side, without at the same time lowering it slightly; for as soon as it leaves its place of rest either the cutting edges of the anterior or some of the cusps of the posterior teeth so come in contact as to force the jaws apart, and we find it impossible to keep all of the teeth in contact at the same time. If the movement be a forward one, as in the prehension of food, the outer edge of the inferior incisors comes in contact with the inner edge of the superior ones with a shears-like action, while the posterior teeth do not meet. If a side movement, or in any movement made in grinding food, we observe that the antagonizing cusps come in contact, not merely upon the points alone, but along the whole sides from sulci to points; so that the grinding surfaces are really inclined planes.

In this case we find also that the incisors are almost entirely relieved of any wear. This is a wise provision of nature, as it prevents the teeth from wearing away rapidly, and also gives increased and better grinding surfaces. Where the articulation is such that the cutting edges of the incisors come in direct contact, and the posterior teeth so occlude that the points of the cusps are also in close contact, we find that the inferior maxilla has great freedom of motion, and the antagonizing teeth so wear against one another that in a few years the cusps almost or entirely disappear, and the incisors become worn, in some cases down to the gum itself, nature usually taking the precaution to keep the pulps protected by a deposit of secondary dentine. The teeth then present worn, flat surfaces, which are not only more or less sensitive, but are also in some cases nearly useless.

These are facts familiar to us all, and it seems hardly necessary to have described them. I shall not dwell upon the different methods of repairing such cases of abrasion by building up with gold, crowning, etc., but rather suggest that we pay more attention to correcting the articulation of our younger patients and prevent if possible this waste of tooth substance. It seems as though with our improved systems and methods of correcting irregularities, that we might be able to do much in this way. Perhaps a slight changing of the position of one or two teeth at the proper time might be all that would be needed in some cases.

Abrasion is also frequently caused by the loss of the molars making the anterior teeth do double duty. We should always try to impress upon our patients the necessity of preserving the molars, or, where they are lost, the necessity of replacing them with artificial substitutes, so as to preserve as nearly as possible, the full amount of grinding surfaces.

Erosion was first noticed by Mr. Hunter, who called it decay by denudation and supposed it to be a disease inherent in the tooth itself, and not dependent on circumstances in after life, for the reason that it attacks certain teeth rather than others, and is often confined to a particular tooth.

This disease may attack any of the teeth, but is usually found in the anterior teeth, and most frequently those of the upper jaw. It commences as a single minute pit or depression, usually in the labial surface of a tooth, and gradually broadens and deepens presenting a cup-shaped excavation in the enamel, which in some cases extends so as to involve the entire labial plate of enamel and portions of the dentine. In other cases several pits appear at the same time, and gradually extend until they meet and form one irregular shaped depression. There seems to be nothing definite in regard to the shape of these cavities or excavations.

Frequently we find grooves extending across the labial surfaces within one or two lines of the gum. Again we see irregular denuded areas which present a wavy or undulating surface; other rare cases show a groove extending in a direction parallel with the long axis of the tooth; very rarely are to be found teeth having the approximal surfaces eroded, and appearing as though filed out with a rat-tail file. Occasionally are cases sometimes called chemical abrasion, where the incisors are so eroded on their cutting edges as to present a truncated appearance; the teeth so shortened that the cutting edges fail to come in contact upon closing the mouth, there being a space in some instances of nearly or quite a quarter of an inch. The rapidity with which erosion takes place varies greatly. Within two or three years it may destroy half or two-thirds of the crowns of the central incisors; in other cases it may require six or seven years, or perhaps longer, to accomplish the same effect. Where we find a number of eroded teeth in the same mouth, usually some one or two anterior teeth present the largest eroded area, and each succeeding tooth toward the posterior part of the mouth shows less erosion. Upon inquiry we learn that the disease first manifested itself in the tooth or teeth most eroded. The eroded surfaces at first show very little discoloration, but gradually the exposed dentine assumes a light and then a dark brown color. The surfaces are almost invariably highly polished, and the teeth affected are frequently of a very hard, dense structure, and very sensitive. In fact, these clean and highly polished surfaces are one means of distinguishing erosion from dental caries.

In the treatment of this disease our knowledge and skill at present enables us to do little more than to treat such cases the same as we would cavities caused by dental caries, and fill, build down or crown as the case seems to require.

As regards the etiology of erosion we find a great difference of opinion, some writers claiming that there is no such disease, and that all loss of tooth substance attributed to erosion is caused by some mechanical means, as the too liberal use of the tooth brush and powder, the friction of the lips, etc. There are many good arguments against this theory, such as erosion appearing in teeth that are not habitually brushed, grooves extending in direction of the vertical axis of teeth, which are brushed horizontally, and erosion occurring upon the approximal surfaces of the lower incisors and across their cutting edges, leaving the labial and lingual enamel surfaces intact, which results it would be impossible to produce with brush and powder.

Another theory is that the tooth itself is defective in structure, but our closest observers have failed to detect any such difference of structure.

A very ingenious theory is advanced by Mr. K. Bridgman, in a paper on electro-chemical relations, and is based on the following and similar experiments: A piece of stout copper wire about three inches long was submerged about half its length in dilute sulphuric acid. The latter very soon gave signs by the coloring it received of the copper commencing to undergo solution, and after having been suffered to remain undisturbed for twenty days it presented the appearance above the acid of a bushy rod, the portion exposed to the atmosphere becoming coated with a layer of minute and beautiful crystals of sulphate of copper, extending from near the top to within three-sixteenths of an inch of the liquid. At this intermediate portion a greater amount of chemical action had been induced, corroding the wire about half way through and forming a neck tapering upward.

He then reasons that the action which arises between the metal and the acid is due to polarization and is evidenced by the following proceeding: A similar piece of copper wire wholly submerged in the acid so as to entirely exclude any portion of the metal from coming in contact with the air, remained for many months without imparting the slightest tinge of color to the liquid, but on suffering the fluid to evaporate, so as to bring the upper end of the metal near to its surface, the instant the slightest portion became exposed to the atmosphere chemical action immediately commenced.

There is, thus, where no sufficiently normal affininity exists between the metal and the liquid to effect the decomposition of water, a power imparted by the metal being polarized by the atmosphere, which renders it thus capable of accomplishing it.

The atmosphere, says Mr. Bridgman, in its normal state being electro-positive, renders, by a well-known law of induction, bodies opposed to it electro-negative. The exposed end of the copper is, therefore, rendered electro-negative, and the acid by the same rule being electro-negative also, the immersed end of the metal becomes electro-positive. It is an established rule, that bodies to be electro-decomposed must first be rendered electro-positive; and it is also part of the same rule that bodies receiving an addition of matter must first be made electro-negative. Hence the exposed end of the metal has become negative, and received the crystallization, while the immersed portion being positive has been acted upon accordingly. Now he says let us apply these facts to the mouth. The external epithelial layer of the gum is constantly throwing off its worn-out cells, and by this wasting process determines its electro-positive state, while the crown of the tooth, as a continuation of the epidermal layer, partakes of the like condition. Were the teeth wholly and constantly submerged and protected from the air, it is probable that like the copper wire beneath the acid, they too might remain intact. But as the air is constantly passing into the mouth, or even through it in the act of breathing, they are thus having one end exposed to the air and the other to the fluid, moistening the gum, subject to the same polarizing influence as the metals. In the case of the partly submerged wire it has been shown that the principal amount of electro-chemical action takes place near the surface of the fluid, this point determining the line of demarkation.

Hence in the mouth this line may be taken as the existing free edge of the gums. The moisture accumulating here, in the event of any electro-chemical action taking place, it would necessarily be above that line, and consequently the substance of the teeth directly above the gum would be attacked. We see this actually taking place in the peculiar decay so common at the exterior or anterior basal area of the molars, and also on the same part of the upper incisors. This theory, however, does not explain those cases of erosion of the cutting edges.

Dr. E. D. Swain, of Chicago, has also made a close study of this theory, and having repeated and varied the experiments of Mr. Bridgman, has become fully convinced that the true explanation of erosion is not to be found in this direction.

Prof. Truman has advanced the idea that erosion is probably due to the solvent action of acid mucus secreted by the follicles situated in the labial mucous membrane, and that the disease is more active at night, from the fact that during sleep the flow of alkaline secretions from the salivary glands is arrested, hence the acid secretion of the mucous follicles is not neutralized to the same extent, if at all, as during the day time—when the salivary secretion is active. In support of this idea Prof. Truman stated that he had caused tests to be made with litmus-paper of the labial mucus in the mouths of patients suffering from erosion, by the patients themselves immediately upon wakening, and each time had found a distinct acid reaction, and he was led, therefore, to believe that the disease is to be accounted for upon that ground.

Dr. E. C. Kirk repeated these tests with the same results, but upon trying the tests upon the same patients during the day, in the office, failed to obtain acid reactions until he had taken the following precautions: the mouth was rinsed with water, and all adherent mucus and saliva carefully wiped from the labial mucous membrane.

A double fold of dry napkin was then placed over the eroded teeth, and a piece of moistened blue litmus-paper sufficiently large to embrace the whole area of erosion placed upon the napkin, after which the lip was held firmly in contact with the litmus-paper for a full minute. Upon removing the paper it was found to be distinctly reddened, but the change of color was not uniform over the entire surface. It was found that a series of red spots, corresponding in number and position to the orifices of the labial mucous follicles, were dotted over the paper, which after a short time spread through absorption of the acid, and formed reddened areas which bore considerable resemblance in configuration to the eroded areas upon the teeth. He then tried the litmus test upon other portions of the oral mucous membrane and found that the secretion of acid mucus was purely local in its expression, for while that immediately overlaying the eroded area was decidedly acid, the secretions from the palatine mucous membrane were frequently, in fact almost invariably, found to be alkaline. This chemical theory he thinks fully explains those cases of erosion occurring upon the labial surfaces, but it does not explain erosion of the cutting edges, unless a like condition of acidity of the mucous secretions can be found at the tip of the tongue, which can only be determined by future investigation.

Prof. Black calls the etiology of erosion one of the most obscure subjects in pathology, and says that with our present knowledge it is practically unexplainable. He further states that the theory that it is caused by acid mucus is supported by several who have written on the subject, and our present knowledge affords us no alternative but the acceptance of the general idea that it is the action of an acid under some peculiar modifying influences as yet unknown to us. While this is unsatisfactory in the extreme, there seems to be nothing better to offer. The influence of micro-organisms appears to be out of the question. These enemies are accustomed to seek foul places, and eroded surfaces are habitually clean surfaces. If by a change of condition the surface eroded becomes habitually foul, caries takes the place of erosion. This occurrence is very rare, but it is not unknown.

Now, if this chemical theory is the correct one, or if we can find acid mucus present, one means of combatting erosion will be by the prescribing of lime-water as a mouth-wash, also the packing of precipitated chalk on and around the necks of the teeth just before retiring, and allowing it to remain till morning.

Now in conclusion, let me urge upon the members of our profession the importance of closely observing such cases of erosion as may come under their observation, that we may some time in the future be able to gather such facts as will enable us to more fully understand the etiology and proper treatment of this disease.

HOW CAN THE DENTIST INTEREST HIS PATIENT IN THE PROPER CARE OF HIS TEETH.*

BY DR. S. SAXE, WHITEWATER, WIS.

That there is a great lack of interest on the part of the general public in all that pertains to this subject is a fact well known to every dental practitioner. Is it desirable that there be any improvement in this respect? Has the profession anything to fear from the results of any change in this regard? Would it in any way injure them? No, not at all; I apprehend quite the reverse would be true. But the fact of this wide-spread indifference remains; why is it? People in general are sufficiently interested in that which pertains to their own personal advantage; then why so little thought given to so important a matter, which when properly attended to, affords so much pleasure and satisfaction, but when neglected entails so much of discomfort and misery? The answer is given in one word—*ignorance*. With all the facilities at hand for acquiring a thorough knowledge of his profession, the dental practitioner is inexcusable if he does not obtain that knowledge; and ought to be held responsible for any failures resulting from his neglect; likewise, there are a few things the public must know and practice if best results are to follow. This ignorance is not confined merely to the uneducated and lower strata of society; teachers and professors in all ranks, yes, and M. D.'s will surprise one with what they do not know about the subject.

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* **Read before the Wisconsin State Dental Society, Milwaukee, July, 1889.**

To illustrate: Not long since a father came in quite a ferment, bringing his boy five or six years of age, who, as he really believed, had met with a misfortune; he had loosened one of the central incisors. "Of course it is a permanent tooth—will it ever grow tight again?" was the anxious inquiry. He was much relieved when told that no harm would come of it, being a deciduous tooth soon to be cast off. Now, this person was well posted in his profession, and above the average in general intelligence.

Numberless instances might be given illustrating this point in all of its different phases, but it is not necessary, they are familiar to every practitioner. And so this lack of a proper understanding of a few essential facts, which all might easily obtain, is not only the source of much annoyance, but of irreparable damage as well. Many seem to have the impression that nothing is needed to be done unless pain is present—visit the dentist as necessity compels; they are a very unsatisfactory class of patients, and altogether too numerous. Then too, the way is open for the advertising quack to get in his work. A credulous public give him a royal welcome, and fail to appreciate the honest efforts of the conscientious practitioner.

There is something radically wrong when a stranger can come to your town and induce crowds of people to submit to a wholesale extraction of their teeth; or are so captivated by his pleasing announcement: "Teeth filled without pain; all work fully warranted," etc., as to allow him to operate to his heart's content, when nothing whatever is known of his qualifications beyond that given by his own egotistical self. It is said "true merit will win." Yes, it ought to and usually does, but often the time is too long, the remedy is too costly. If the public are to have anything like a just appreciation of the value pertaining to this matter, greater effort will have to be put forth in the way of education. They must know something of the laws of their physical being, and also be able to distinguish more quickly between the true and the false. But by what process shall it be accomplished? It is said "there is no royal road to learning," a truth which applies in this case. The process is slow, yet by persistent effort much may be accomplished. To illustrate: A young man about 21 years of age came to have his teeth filled; they were rather below the average in quality, bearing on the chalky order; evidently decaying quite rapidly. Thirteen cavities were filled, mostly with amalgam. On dismissing him I endeavored to impress him with the thought that he had something to do if his teeth were to be saved, and that one of the essential things was to keep them scrupulously clean, showing him how it should be done. We have not done our whole duty to our patients when we only give directions in a general way—we must particularize more or less. This patient returned in two years, having spent the whole of that time in the far west. I was surprised to find so little needing attention—two or three fillings to be repaired and one or two new cavities, all of which received proper attention. The patient was again dismissed as it proved for another two years, at the end of which time very little if anything needed to be done. During all of this time he assured me he had kept his teeth thoroughly cleansed. Now I am confident from the nature of the case, that had there been no more attention given than we find in a majority of cases, the result would have been far different, and the operator blamed for the unfavorable condition of things. Something can be done to awaken a general interest by distributing copies of short, comprehensive treatises on the teeth. Some of us have done something in this line, doubtless, with good result. And yet I have a feeling that more ought to be done than we are doing or can do by any present methods. Why not to some extent, make it a matter of popular education. Our temperance reformers hope to accomplish much by teaching in the public schools the effect of alcohol on the system. Let us have something similar whereby the elementary principles of dental hygiene may be taught.

Our work is too much of a reformative character; why not heed the old adage of the "ounce of prevention" and make the business more of what might be called a formative nature. It is certainly desirable that the general public be better informed on this subject, and there is no good reason why they may not be. It is a duty they owe themselves and the dental profession. Did they more fully appreciate the situation it would stimulate every honest and faithful operator to put forth greater effort to raise the profession to a more perfect standard. Then if we would interest our patients in the proper care of their teeth, our duty is imperative; we must educate little by little for the time being in every laudable way as opportunity offers, hoping that the day is not far distant when ways and means may be devised whereby the people will be educated up to a point that will lead them to give the subject its just and proper share of thought and attention.

RECIPROCATING MOTIONS IN OPERATIONS ON THE TEETH.*

BY F. H. EMMERLING, D. D. S., Milwaukee, Wis.

Before the invention and introduction of the dental engine the dentist was compelled to use the hand-drill, file and chisel to perform in a slow and tedious manner those operations which are now completed in a comparatively short time by the use of the dental engine. At the present time there is nothing tedious about filling operations; the engine sometimes makes them interesting—for the patient. The dentist of former years did not know much about rotating motion in the mouth of his patient, except the slow working hand-drill—unless it was the turning of the Key in extracting teeth.

He took the file and chisel in his hand, and, with slow reciprocating or oscillating motions, he proceeded to prepare the cavities and trim the fillings. No wonder he grasped the lately-discovered engine drill, which enabled him to rotate the bur at a speed of several thousand revolutions in a minute! Indeed, it must have caused quite a "revolution" in the methods of operating then known to the dentist.

If we observe the progress made in the facilities for the performance of operations on the teeth since the discovery of the dental engine, we will find that nearly every invention and improvement to facilitate the preparation of cavities, cleaning and separating teeth, trimming and polishing fillings, is in the principle of rotating motion, while the reciprocating motion is almost entirely neglected, for the simple reason, because it could not be applied in connection with the dental engine. In finishing a filling it would certainly not be wise to apply a piece of emery paper in your hand and rub the filling until it were smooth, if a disc of the paper might be attached to the engine and the work performed in less time and with a much better result. How much better can the margin of a cavity be prepared with suitable points rotated by the engine than by the slow hand method. In filling teeth, especially in preparing cavities, sharp angles ought to be avoided as much as possible, and since the rotating bur necessarily leaves a rounded surface, it may be used to a great advantage. The fast-revolving corundum disc for trimming and separating teeth and fillings is also a great improvement over the slow reciprocating file.

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* Read before the Wisconsin State Dental Association, July, 1889.)

But there are a great many cases in which we cannot apply rotating motion and again have to resort to the file and chisel with reciprocating motions. Since a circle consists of a number of short straight lines, arranged at a certain angle, it is not difficult to obtain a rounded surface with a flat file, if the strokes are short and quick and there is enough room to allow the operator to follow the curve with the file. If it proves necessary, however, to use the file and chisel in operations on the molars and distal surfaces of the second bicuspids, or in cases where the teeth cannot be properly wedged apart, it is very difficult to avoid sharp corners because the tongue and cheeks and the crowded condition in the mouth, will sometimes not permit the application of the instruments at different angles.

Why is it that the engine is not made to give us all the reciprocating motion we need? After man got tired of working—and breaking—the scroll saw by hand, he constructed one suitable for foot-power and found that he did not break as many as before and could do better work, and also use his hands to better advantage.

I do not mean to insinuate that a scroll saw attachment should be added to the dental engine, but I would like to suggest a little apparatus which would transform the rotating motion of the engine shaft into reciprocating motions, giving a stroke of from $^1/_{16}$ to $^1/_4$ of an inch and which would not be any bulkier than the right angle attachments for rotating motions.

[I intended to show you to-day a working model of a right angle and a straight attachment, but to my regret the mechanic disappointed me the last moment.]

During the short time of my practice I have had a great many occasions to test the truth in the old saying: "What is worth doing at all is worth doing well," and now I arrived at the conclusion that there are only two ways of filling teeth: either to fill them properly—or not at all. Ignorant patients coming into the office, asking : "What do you charge to have my teeth fixed," might possibly be satisfied if the part of the fillings which is visible to them is nicely polished and "shines like gold," but the dentist cares more for the parts between the teeth and the cervical margin. The revolving paper disk is of great value for trimming and polishing fillings, but in approximal fillings—if we like to preserve that peculiar condition which Dr. Webb called, "knuckling up" of the fillings, the disk is very apt to destroy the contour of the work.

Probably the most essential portion of those fillings is the cervical margin, and in order to trim it well and preserve the contour at the same time, it is necessary to employ strips and files; in other words, reciprocating motions. If we could use a little right-angle attachment with suitable points for the molars and the straight attachment for the front teeth, giving short strokes in quick succession, it would probably enable us to complete the operation in much less time, and with a better result. We would not be so apt to touch the rubber dam or injure the gums, because it would not be necessary to go beyond the margin of the filling, as in using the paper strips, on which the working part is usually in or below—(in the lower teeth above)—an imaginary line, running longitudinally in its center. In fillings which extend under the gum it would avoid the cutting of the rubber dam or gums in order to reach the center of the cervical margin, which is usually situated higher in superior and lower in inferior cases, than the end portions of that margin. For polishing cervical margins, a thin strip of wood and wet pumice stone, applied with reciprocating motions, would probably be very serviceable.

In deep-seated fissure fillings, where the filling material has been brought too high above the margins of the cavity, it would perhaps be an excellent way to trim down the surplus material by short reciprocating motions with a suitable instrument, because it would not, like the rotating bur or grinding stone, be apt to roughen the surrounding enamel by coming in contact with it.

Reciprocating motions for the cleaning of the teeth on their lingual, buccal and approximal surfaces, are undoubtedly very useful. If we have to make use of the file for separating teeth in the anterior portion of the mouth, the curved separating files will answer the purpose very well, avoiding the straight cut at the same time, but for space between the first and second or second and third molars, we would overcome the difficulty of guiding the file and moving it at the same time, if we could originate the motions directly within the mouth.

For preparing teeth for the reception of gold caps or bands, we sometimes have to grind off heavy projections and prominences on the tooth in order to obtain smooth and straight surfaces; a condition which it is often difficult to obtain by rotating motion. I think that reciprocating motions in the interior of the oral cavity, would materially aid in obtaining a good result.

I am sorry that I cannot speak about actual practical experience with reciprocating motions applied with the dental engine, but I am determined to give it a practical trial, and perhaps I can speak about it later on. If we only succeed in reducing to some extent the amount of pain and agony our patients have to suffer, we would accomplish a great deal.

NITROUS OXIDE FROM A SCIENTIFIC AND PRACTICAL POINT OF VIEW.

BY DR. LAWRENCE P. LEONARD, WASECA, MINN.

Nitrous oxide gas is obtained by heating ammonium nitrate at a temperature of about 470° F. It was discovered by Dr. Priestley in 1776. It attracted but little attention until 1844, when Dr. Horace Wells, of Hartford, Conn., gave it an impetus that has made both him and the gas immortal. As you are probably all familiar with the history and manufacture of nitrous oxide, together with its physical and chemical properties, that part of the subject will be passed and attention paid to the effects of the anæsthetic upon the human system.

One almost universal fault is that we look at all complex and obscure realities as things mystical and supernatural. Therefore the great object of this paper will be to go to the very bottom, to lay bare, as it were, the simple stones upon which this great science is laid, and to bring a comprehensive picture before the mind.

Let us first study some of the peculiarities of sleep, and then those of anæsthesia. The great system with which we have to deal is the nervous. Let us study some of its characteristics and peculiarities. We find that there are sensory and motor parts. The sensory is much more irritable. What is meant by irritability? simply this: that the molecules are unstable and easily set vibrating.

When from any cause the unstability of these molecules is interfered with, from that moment sensations are abnormal. The interference may be caused by the accumulation around and between the molecules and cells, of the waste product of the tissue itself, which are carbon-dioxide, urea, etc. When the nervous system gets to any extent in this latter condition, it is said to be non-irritable, stable or exhausted. To restore the normal unstability, perfect quietness of the molecule and nutrition is necessary, such quietness is termed sleep. Understand well, please, the definition of sleep, it means rest—absolute rest, of the molecule, cell or organ as the case may be. To this individual part, it matters not whether there is consciousness or not, it rests, it sleeps, nevertheless.

This is a radical statement, but remember, sleep is both local and general. The intellectual cells of the cerebrum *never* rest or sleep unless we are *unconscious.* And according to the tranquility or nonfunctioning of these cells, is sleep, as generally understood, profound or light. Cast a piercing glance throughout the system, and when you see a muscle perfectly quiet you know that it is sleeping. Even the heart itself rests or sleeps about 15 seconds of every minute.

Now let us turn to the introduction of an anæsthetic and study the phenomena thereof. Immediately the irritability, that is the comparative unstability of molecule and cell, is interfered with, the drug, in state of fine division, insinuates itself between the minute particles of nerve tissue, that is, separates molecule from molecule and cell from cell, so that they are all, as it were, individuals, unconnected, isolated if you wish, then there is narcosis or anæsthesia. This unlinking of nerve tissue commences in the remotest parts, it advances from the periphery of the sensory nerves *upward,* and from the *cortical cells* from the periphery *downward,* hence the medulla oblongata, which is the center of circulation and respiration, is the last to be effected. By this it is seen that anæsthesia or the unlinking of the minute particles of nerve tissue can be continued until the "vital knot" in the medulla is reached, but here it must be stopped, for the moment it unlinks these cells that moment there is death. Anæsthesia is purely local, the drug has got to come in actual contact with the nerve tissue. In general anæsthesia this is accomplished by the blood absorbing the medicament and carrying it to even the remotest part of the system. To prove this Claude Bernard has pointed out the method of study, and to him we are indebted for the following details:

Taking a glass filled with a solution of chloroform in water, one part of chloroform to 200 parts of water, it should be closed with a sheet of india rubber stretched across the mouth.

Through a slit in the rubber diaphragm the body of a frog may be fixed in such a manner that it shall be half immersed in the water within the glass. Two specimens may be thus prepared for experiment—one frog with the head and upper part of the body under water, while the other frog is adjusted in the upright position with only the hind legs and inferior half of the body in contact with the anæsthetic fluid. Notwithstanding this difference, at the end of a few minutes anæsthesia is complete in every portion of the two animals. This is due to cutaneous absorption induced by circulation of the chloroform with the blood, so that the anæsthetic is transported to every portion of the body alike. The same result is obtained if only one of the extremities of the frog be immersed in the liquid ; for instance, one limb.

If, now, we take measures to prevent the flow of blood from the heart into a given portion of the animal, the experiment will be varied to a certain extent. Removing the sacrum of the frog and exposing the great lumbar nerves and vessels, the arteries and veins may be ligated so as to arrest the circulation at that point, and to cut off all communication between the upper and lower portions of the animal, excepting through the medium of the nerves that have been excluded from the ligature. In a frog thus prepared it is evident that the circulation of the blood between the upper and lower halves of the body is completely arrested, but the functions of the nerves and of the separated segments of the spinal cord are still persistent. Reflex movements may still be excited in the lower extremities as well as in the upper, by irritation of the cutaneous nerves.

Two frogs thus prepared and immersed in chloroformed water, as in the previous experiment, present the following results : The frog which is placed with his head and upper half of the body under water soon becomes insensible, not only in the submerged portions, but also in the parts beyond the ligature that are situated above the caoutchouc diaphragm. So far as the submerged portion of the animal is concerned, this is perfectly intelligible. But the parts that have been cut off from the general circulation by the ligature are also paralyzed. Obviously this cannot be due to the circulation of the chloroformed blood through the lower half of the body. The only means of communication between the portion above the ligature and the portion below the ligature is through the lumbar nerves.

These spring from the spinal cord above the ligated portions, where it is freely irrigated with the chloroformed blood from the heart. Evidently, therefore, the paralysis of the lower extremities is owing to a loss of capacity for the origination and admission of motor impulses on the part of the apparatus contained in the roots of the lumbar nerves.

In the case of the companion frog, which was at the same time placed with his hind legs and inferior portion of the body in chloroformed water, the parts that are above the water remain uninfluenced by the chloroform. This fact shows that the anæsthetic has not reached these parts, and the obstacle presented by the ligature to the process of circulation is sufficient to account for this circumstance. The posterior portion of the animal loses its sensibility exactly as if no ligature existed, because the skin absorbs chloroform wherever it is in contact with the anæsthetic liquid.

The peripheral sense-organs are completely paralyzed by this local action, but it remains local. The anæsthetic influence cannot ascend the lumbar nerves to their central origin in the spinal cord above the level of the water in the jar, consequently all parts above the ligature remain in their normal condition of sensibility and motivity. By these experiments we are taught that the action of anæsthetic substances is local, and is only manifested by those tissues which are directly in contact with the paralyzing agent. When the spinal cord, or the brain is etherized, the animal ceases to feel, because the central recipient apparatus is paralyzed. When the anæsthetic is excluded from the central organs, but is at the same time freely supplied to the peripheral organs of sensation in the skin, the animal ceases to feel, because the peripheral apparatus for the reception and transmission of sensory impressions is in a condition of paralysis. It was just now intimated that the frog might cease to exhibit sensibility as a consequence of the action of the chloroform upon the spinal cord. In order to determine whether the cord can become the seat of changes capable of destroying sensibility independently of changes in the brain, the following experiment may be performed: The frogs should be prepared by transversely dividing the spinal cord in the upper dorsal region. This operation would not hinder the circulation of the blood, but the power of executing voluntary movements with the hind legs will be lost by the animal, because all nervous communication between the brain and the posterior extremities has been destroyed by the spinal section. The capacity for reflex movements will, however, continue to be exhibited by those extremities—in fact it will be considerably improved as a consequence of the loss of the inhibitory influences previously derived from the brain. If, now, the two frogs thus prepared be placed as in the preceding experiments so that the upper half of the one and the lower half of the other is in contact with the chloroformed water, they will soon become insensible in every part.

The condition of the anæsthesia is generalized by the free circulation of the anæsthetic liquid, without regard to the position of the skin through which it is absorbed. The phenomena of anæsthesia, illustrated by the cessation of reflex action, etc., are exhibited as completely in those portions of the animal which are connected with the brain as in those which are in communication with the posterior segment of the cord alone. This proves not only that the cord is, to a certain extent, an independent nervous center, but also that the action of the anæsthetic is direct and local in its effect upon the nervous centers.

This may be still further illustrated by the experiment of ligating the body of a frog so as to prevent all passage of blood from the heart into the lower half of the animal, and, having divided the spinal cord a short distance below the ligature, placing the head and upper extremities of the animal in chloroformed water.

The submerged portion becomes anæsthetized, as in the previous experiments; but since the chloroform cannot reach the parts beyond ligature, they remain unchanged, and the posterior extremities can execute reflex movements, showing that the lower segment of the cord is still capable of receiving and transmitting sensory impressions.

Anæsthetics differ as to their action: some act mechanically, *i. e.*, crowd the nerve elements apart—such as alcohol, nitrous oxide, ether, etc. Others crowd and also combine, *i. e.*, have both a chemical and mechanical effect upon the nerve elements. These are chloroform, chlorine, bromine, etc. These are comparatively dangerous, and with difficulty are eliminated from the tissues.

Let us now trace closely the action of nitrous oxide. This gas when taken into the lungs is absorbed and carried to all parts of the body by the blood. From the blood it escapes and saturates the whole nervous system. How is it that nitrous oxide produces narcosis so rapidly? This is accounted for by the fact that the gas is quite a stable chemical compound, having no chemical effect whatever upon the system, but is given out just as inhaled. The inhalation of gas very pleasantly satisfies the involuntary movements of the lungs, but it does not accomplish the object thereof, *i. e.*, the purification of the blood. On the contrary, carbon-dioxide is retained within the tissue. CO_2 remember is an anæsthetic itself—it is this gas that does the anæsthetizing in asphyxia. Now, at last this paper has reached the all-important part. As stated, there are two anæsthetic agents in the system. First and most important is nitrous oxide, which is conveyed into the tissue by the blood. The second and less important one is carbon-dioxide, which is a product of the tissue, and is held therein by the non-purifying inert action of nitrous oxide. These two gases, nitrous oxide and CO_2 mechanically insinuate themselves around and between, and thus unlink the molecules and cells of the great nervous systems, and thus overcome the instability or irritability; in other words, there is narcosis, profound or slight, according to the separation of the molecules. The comparative safety of nitrous oxide is by virtue of its rapidity in leaving the system, and leaving it in a condition exactly as it found it. This fact tends to show that it has only a mechanical effect. It is a fact, that there is really more oxygen in the gas than in air, yet the latter stages of anæsthesia, especially if the gas is continued too long, are nearly those of asphyxia. The explanation is this: air is composed of about 21 parts oxygen and 79 parts nitrogen.

These gases are simply mixed, having no molecular union. This accounts for the readiness with which oxygen is taken up and carbon-dioxide given out in the pulmonary circulation. Nitrous oxide, as stated above, has but two parts of nitrogen to one of oxygen, but it is a chemical compound held together by chemical affinity, which is not overcome at the ordinary temperature of the body, consequently the gas itself undergoes no change, but is given out the same as when it entered the lungs and blood. By this we see that very little carbon-dioxide leaves the blood, but on the contrary "the blood ceases to be oxygenated, carbon-dioxide accumulates and the center of conscious impression is rendered inactive in consequence of a deficient supply of oxygen and an excess of CO_2." The following are some of the dangers connected with the administration of gas. If, after the surgical period is reached, the administration of gas is continued, ultimately there is cessation of respiration and circulation.

Owing to the need that the system has for oxygen, and the lack of oxygen therein, during the administration of gas nature puts forth every effort to obtain it and to establish equilibrium, hence dyspnœa, and in fact the last effort is an inspiration. However, gas has not as much effect upon the lungs as it has upon the heart. It is the effect upon this latter organ that is to be feared. "At first," as said by Foster, "the circulation is increased, followed by a constriction of the arteries and an increased peripheral resistance. This peripheral resistance, while indirectly helping to augment the force of the heart beat, is a direct obstacle to the heart emptying itself of its contents. On the other hand, the increased respiratory movements favor the flow of venous blood toward the heart, which in consequence becomes more and more full.

The increased resistance in front, the augmented supply from behind, and the long pauses between the strokes, all concur in an increasing distention of the heart. The distention of the cardiac cavities, which at first is favorable to the heart beat, becomes injurious as it increases. At the same time the cardiac tissues which at first are probably stimulated, after a while become exhausted by the action of the venous blood, and the strokes of the heart become feebler as well as slower. As the quantity which passes from the heart into the arteries becomes less, second by second the pressure gets lower and lower, the descent being assisted by the exhaustion of the vaso-motor center, till it almost sinks to zero before the last beats. Thus, at the close of asphyxia while the heart and veins are distended with blood, the arterial system is less than normally full. Hence, invariably, death occurs with expanded heart and lungs." Deeming a knowledge of the phenomena of asphyxia of vast importance to the dentist the following is given :

There are three marked stages in asphyxia :

1st. A stage of dyspnœa, characterized by an increase of the respiratory movements, both of inspiration and expiration.

2d. A convulsive stage, characterized by a dominance of the expiratory efforts and culminating generally in convulsions.

3d. A stage of exhaustion, in which lingering and long drawn inspirations gradually die out. These inspiratory gasps spread into convulsive stretching of the whole body, and with extended limbs and straightened trunk, the head thrown back, the mouth wide open, the face drawn and the nostrils dilated, the last breath is taken in.

Restoration:—When dangerous symptoms appear, apply nitrite of amyl to the air passages, then sudden intermittent pressure upon the chest to bring about an expiration and contraction of the heart. Steadily raise and draw the arms forward to bring about inspiration. Repeating this operation, or any other that will contract and expand the thoracic cavity about sixteen per minute.

Mode of administering and operating:

To be successful it is necessary first to have a good apparatus. Do not try to administer if the apparatus is imperfect, for, in all probability the result will be embarrassing to both operator and patient. (A gasometer is good. In the absence of this, the apparatus should be attached to a bracket, so that it can be swung easily to and from the side of the chair). There is no inhaler as near universal and perfect as the inflatable; owing to its flexibility it can be adjusted to any person's face. Some means should be resorted to to divert the patient's attention from the operation, such as, after allaying the person's fears, ask them to count until they become unconscious, and on waking to tell them the number they stopped at. Also have them move a finger. On a bracket table, within reach, under cover, have all the instruments that you may need.

Thoroughly acquaint yourself with the operation; have every move that you think you may have to make pictured out in your mind. A prop should be placed in the mouth. Don't use corks or rubber chunks. Patients don't like them, and on account of their size they are very apt to be in the way. Nickel plated ones graded in size are the best. Props should be separate, with a soft string attached to them, so that the inhaler will fit snugly around the cord and also guard against danger.

All things being ready, the gas is turned on. Place the inhaler to the face, but don't admit the gas until after a few quiet or normal respirations. By so doing there is scarcely ever any trouble after the patient commences to inhale. Be sure and get patient well under influence. The surgical period being reached, grasp the necessary instrument in one hand, pass the inhaler to your assistant with the other, and commence extracting with a firm and determined nerve.

IMPLANTATION.*

BY LOUIS OTTOFY, D. D. S., CHICAGO, ILL.

In view of the fact that so much has been written on this subject during the past few years, it seems almost necessary to apologize for again bringing it to your attention. However, until we know more about the subject than we now do, a free discussion and study can be nothing less than beneficial. In this brief paper it is my aim to call your attention to only a few special points of the general subject. The method of performing the operation has been so frequently described in the literature and so many demonstrations before societies have been made, that nearly every one is familiar with it.

One point to which I wish to call your attention relates to the selection of suitable teeth. The question is so often put: "Where will you get the teeth?" It is true that this is a difficult problem. The suitable and available teeth ought to be only those which have been extracted for the correction of irregularities, but these are too few in number to supply the demand. But even aside from this difficulty, the crowns of natural teeth in many cases, are not satisfactory; they are either too much decayed, too brittle, or checked and cracked. Unless a tooth is carefully examined, and the light permitted to strike it from different directions, this fact may be overlooked, and the result may be, as I have regretted to find it, a successful, servicable, implanted tooth, whose crown is crumbling to pieces. In one instance the irritation following the setting of a gold crown on a split root, led to the loss of a splendid, successful and useful implanted tooth, although two other cases treated in the same manner are giving good service. I would suggest to those members of your Society, who practice implantation, the setting of a Logan crown on a natural root. This method has several advantages. Not only is it possible to secure a more suitable crown, both in shape, size and color, but the grinding necessary to secure proper adaption to the articulating teeth does not weaken and injure the crown, provided, of course, that this is done within reasonable limits. It is comparatively easy to secure good roots for this purpose at present. When crowning becomes so general as to cause a scarcity of good roots, it will be ample time to devise some other means of inserting artificial teeth. A number of teeth, that I have implanted in this way, seem to all appearances as successful as those which are entirely natural, and have the advantage of not being frail, crumbling and giving subsequent annoyance.

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* Read before the Minnesota State Dental Association.

This leads me to a subject, which, while not strictly implantation, may be properly considered at this point. Under the precautions now observed, transplanted teeth ought to be, and indeed are, quite as successful as implanted ones. The opportunities for transplantation present themselves to almost every practitioner. The skill necessary to perform the operation is also possessed by all dentists.

When, for any reason, it is necessary to remove one or two roots or teeth, it is the simplest matter to place in the socket, so vacated, a Logan crown, mounted on a natural root; good suitable roots can be kept on hand, and the crown can be attached to the root in a very short time; the proper size and shape of root having been selected, no change in the socket will be necessary.

The operator, however, to be successful, must not lose sight for a single moment, that the success of his operation, when performed in this way, depends principally on the antiseptic cleanliness of the tooth, hands, socket, instruments, etc. The many failures of transplantation in past years were due to a wholesale ignoring of antisepsis. If a root has been removed which is diseased, the socket must be thoroughly cleansed before the introduction of the new tooth; indeed it is a better plan to leave the socket open for several days after the root has been extracted. When it is desired to implant the new root and artificial crown immediately, the socket should be syringed with, first a solution of bichloride of mercury, one in two thousand, injected forcibly. After thoroughly cleansing with this solution, a solution of one in five hundred may be used. The socket is then packed with iodoform, and into this the tooth is pressed. These cases heal kindly, rapidly, and the teeth remain useful, although it takes sometimes three months before the tooth becomes firm.

The usual retaining cap, or band, should be used and worn by the patient for a week or ten days, by being cemented in position, after which it may be entirely dispensed with, or worn only at night for several weeks.

One hour is sufficient to extract a diseased root, prepare a new root and crown, place it, and to make and place the retention cap.

COPPER AMALGAM.*

BY DR. M. B. WOOD, MANKATO, MINN.

The subject to which I call your attention, and in which I shall try to interest you, is one which is attracting the attention of some of the brightest and ablest men in our profession, both in our own country and abroad.

A large part of this paper is composed of the sayings and writings of others, for three very good reasons: First, they are much abler than I; second, their opportunities for observation have been greater than mine; and third, their experiences with the material we are considering have covered a much longer period of time than mine.

INTRODUCTION.—Dr. Bogue says: "So far as I know, copper amalgam was introduced to us by Dr. Claude Rodgers." He also says: "Dr. Rodgers, of London, son of Dr. Rodgers mentioned before, has in his teeth some fillings of copper put in by his father, that, when I last saw them, were twenty-two years old."

EFFECTS UPON THE SYSTEM.—Dr. W. H. Waite, Liverpool: "In regard to the injurious effects of copper amalgam, I believe the old Sullivan amalgam was almost entirely made of copper precipitate, and a few years ago that amalgam was used to a very great extent, even by the best dentists in England, and it is still used very largely by them. Yet I do not remember of ever hearing of any injurious effects from it."

Dr. Latimer: "I saw in *Popular Science Monthly* an account of some remarks concerning copper, as to whether it was poisonous or not, and it was there stated that in some parts of England (in Cornwall, I think), the water of a certain creek was so impregnated with copper that it even paid to precipitate the copper from the water; and yet the people drank the water with impunity, seeming to be no less healthy on account of it."

COMPATIBILITY WITH TOOTH STRUCTURE.—Flagg's "Plastics and Plastic Fillings:" "To copper, then, is ascribed the power of diminishing, in a manner, *shrinkage*, as copper amalgam neither expands nor contracts. It favors rapidity of setting. It is accredited with the power to add to the compatibility of the filling material with tooth bone, and thus better saves the teeth. It is thought to produce greater harmony between filling material and dental pulp, and thus promotes toleration of foreign material in close proximity on the part of that organ. For these reasons I regard it as a most valuable component of dental amalgams.

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* Read before the Minnesota State Dental Association.

"My record of pulp saving, noted in each case after five years of trial, is very significant in its connection with the presence of a portion of copper; for while I do not presume to say that it is as yet proven beyond question that pulps do maintain their vitality better under amalgam fillings containing copper than under those which do not, I must nevertheless admit that observation has seemed to point so conclusively in this direction that I should, in my practice, permit, with the exception of tin, no metal filling which did not contain copper to approach a pulp."

ANTISEPTIC QUALITIES.—Dr. Bogue: "Dr. Miller, of Berlin, has called attention to the remarkably preservative influence of copper amalgam, especially in cavities at the margins of the gum. His opinion, for some time, has been that, in some way as yet unexplained, the salts of copper have prevented or destroyed bacterial life. This I conceive to be the real explanation of the efficacy of copper amalgam. *It does not shrink*; neither does palladium; and, so far as I can judge (and I have used them both since 1874), they are equally efficient in protecting the teeth from decay. All the other amalgams, as far as I know, shrink more or less."

Dr. Kirk, Philadelphia: "In the list of filling materials which Dr. Miller, of Berlin, experimented with, with a view of ascertaining which, if any of them possessed antiseptic or antiferment properties, you will see that this is the only filling material in the entire list which has any antiseptic quality whatever. It has not been determined to what this antiseptic quality is due, but it has been proven that it exists, for not only would the filling, but also portions of the dentine which had become discolored through imbibition of the copper salts from the amalgam, completely resist fermentation in beef solutions, a property which is not shared by any other filling material known."

AMOUNT OF MERCURY.—Dr. S. G. Perry, New York: "In the use of copper amalgam it seems to me a great deal depends on the wetness or dryness of the material. We must learn what is the proper amount of mercury to leave in it."

OPINIONS OF EMINENT PRACTITIONERS.—Dr. S. G. Perry: "I think copper amalgam is one of the best materials we have ever had for filling teeth, and all other amalgams are almost laid aside with me."

Dr. Bödecker: "I think copper amalgam makes a much tighter filling than any other kind I have ever used."

Dr. Bogue: "My investigations taught me, moreover, that amalgams should, if possible, be made of a single metal amalgamated with mercury. Palladium is a true chemical compound with mercury. Copper with mercury is probably a true chemical alloy. These two do not change in form or bulk. These two do not discolor the teeth, and no crevices are found around them if the cavities are properly excavated; once you leave those two and go into compound alloy there seems to be no certainty."

PERSONAL EXPERENCE AND SUGGESTIONS.—The foregoing I have obtained principally from a careful review of the *Dental Cosmos* for fifteen years. My own experience covers a period of about one year, and since learning to manipulate it properly I have discarded other amalgams, except an occasional filling of white alloy where the copper would be unsightly. My experience with mortars of different kinds is that one of wedgewood is the best.

A certain amount of friction is necessary to reduce the material to the proper consistency, and without this proper consistency your filling will be worthless. I have found that if this amalgam is left in a drawer exposed to the air, it rapidly looses its easy working qualities, while if kept in a tight bottle for the same length of time, very little change occurs. In working, if the material after heating does not seem to contain sufficient mercury, work thoroughly in the hand after taking it from the mortar, then place in the spoon and heat again, instead of adding more mercury. In cases where it has lain in a drawer for a couple of months, I have had to re-heat three or four times before getting it right. Dr. Ames suggests the frame of an old mouth mirror as a spoon in which to heat. I do not like that, as the metal being thin you are apt to carry the heat too high, and after removing from the frame it cools too quickly. I prefer a heavy waxing spoon kept for the purpose, using a small flame in heating, and holding spoon over the flame until the first globules of mercury appear, then by removing the spoon I have heat enough to bring out the mercury, and am in no danger of getting it too hot, thus causing it to oxidize. The pieces left after one filling may be used again. If found to be too dry to work readily add a fresh piece and they will mix very well. I believe the material can be squeezed too much, as I think the mercury is the bond of union between the particles. I have seen a few fillings of copper amagam cup or appear to dissolve away from the center, just as a filling of oxyphosphate will do. I have also seen one or two opinions published lately to the effect that this was due to some chemical process. I believe it to be due entirely to the condition of the amalgam when it is inserted. Either it is not worked to a perfectly plastic condition, or it is squeezed too dry after getting plastic. I have found it better to use the rubber dam in the majority of cases. The amalgam will not turn nearly so dark if kept dry as if inserted in the moisture. Cavities with thin walls I varnish with copal-ether, and am not annoyed by having the filling show through the enamel.

There are a good many different brands of copper amalgam on the market. I have used different ones, some at double the price of others, and about the only difference that I could discover was the difference in price. I have no doubt that this material will fall into the hands of many who will condemn it after giving it an unfair trial, and without complying with the conditions that are necessary to its success, but I am satisfied that it has come to stay, and that there is a class of teeth and a class of cavities (notably those under the margins of the gums), that can be more perfectly preserved by the use of copper amalgam than by the use of any other material known to the profession to-day.

THE BEST IN OPERATIVE DENTISTRY.*

BY DR. A. C. HEWITT, CHICAGO, ILL.

I.

What is best? Webster defines best to mean, "having good qualities in the highest degree."

What as applied to operative dentistry? First, the highest and broadest comprehension of destructive forces operating upon the human dental organs. Second, the highest degree of knowledge of the means at command to combat those destructive forces; and, third, the highest degree of skill in their application.

Can we attain to such comprehensive knowledge and skill? Clearly, yes, with this reservation: that whatever is superlative to-day may become but comparative to-morrow. We speak of the best plow, the best instrument, meaning not the best Omniscience can devise, but the best obtainable by human endeavor. The single operator may not attain to the best in operative dentistry, for to him will apply the Latin maxim, "*Non omnia possimus omnes.*" But the dental profession, the aggregate of comprehension, knowledge and skill, undoubtedly does contain and has attained to the best as defined by Webster. If, then, the individual member of the profession who possesses some peculiar gift or skill in his peculiar line will communicate to the body, and the body receives, then the best is ours.

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* Read before the Minnesota State Dental Association.

What hinders this giving and receiving? On the part of the individual a native diffidence, or an undervaluation of little things, or a lack of fluency in public address, or a lack of practice in writing out what he may know, or, alas! niggardly selfishness. This latter, now-a-days, we rarely see.

II.

Why am I here? First and foremost as a learner, happy to sit at the feet, not only of those of your number who have a national reputation, but to gather ideas from the younger and less pushing members, who often hold in their keeping what I would gladly obtain.

The essayist and speaker in this gathering will have no more attentive or respectful listener than I. Second. In response to an invitation to contribute my "mite" as an individual and an honorary member of your society.

What specialties have I chosen? The preparation of gold in the operating room; its use in cavities, where failure is most frequent, and incidentally the instruments and appliances best suited to prevent such failures—copper amalgam, as used by myself; how made, how used, and incidentally of instruments and medicaments necessary.

What basis have I for opinions formed and expressed and practices advocated?

First, that formed by reading everything within reach; and, second, by experience as an operator, using my failures as warnings and guides. I never do a thing the second time just the way I did the first, if the former was a failure. Failure commands *change.*

Third, noting the failures of others (and they are numerous enough), and, instead of telling of them, using them as educators. I never follow the lead of any one when failures are his milestones. I shall urge the acceptance of no method, treatment or manipulation, no theory or substance, that years of experience at the chair have not fully demonstrated worthy. Of intense convictions (when not in doubt), I do not deem it egotistical to proclaim the one and assert the other. In doing so I shall use words and phrases plainly, bluntly, without any attempt at rounded periods or scientific terminology. My diction shall be dictum, didactic, dogmatic, if you please, but all the time with greatest respect for the differing opinions of others.

III.

What oftenest claims the attention of the operative dentist? A tooth; a member of the human anatomy more or less alive, complex in its structure, rarely perfect in growth, frequently faulty in form and structure, often scarred by scrofulous, zymotic or syphilitic disease or taint, with patches of broken or lost enamel, and the modified bone underlying softened or decayed, a nest for animalculæ uncounted, tenacious of life and fecund beyond belief (in moisture), having a "nerve ganglion," according to Dr. Ingersoll, a pulp or nerve, in common parlance, nearly subjacent or exposed, or a chamber, a coffin for the nerve, full of rottenness and vile odors, said tooth often set in a socket as diseased as the tooth, said socket a part of the oral organ that has been the conduit for all sorts of unwholesomeness, said mouth a part of a body often vitiated in nutrition, wasted in vitality and poisoned by excess of sedative and narcotic drugs, or driven to exhaustion by the whip and spur of over-stimulation.

What is the operator expected to do? Heal the pyorrhœal socket, build from the apex to the crown, restore lost enamel and contour, in such a mouth, in such a body, and make the restoration permanent for all time, even though the patient by neglect surrounds the operator's work with food particles, to decay and ferment, altogether a task that none but the Almighty can perform.

Shall the operator then shrink from the task? By no means. Perform as nearly a miracle as possible?

What operations are oftenest failures, entire or partial?

Filling approximal cavities in bicuspids and molars at cervix and margin, and the approximal cavities of the incisors and cuspids on the lingual border.

Why? Because these named portions of the tooth are difficult of access, and because of the peculiar structure of the parts.

The cavity in the bicuspids and molars at the cervix, and the gingival portions of the margins have only a very thin enamel if the caries does not extend beyond it, and in the front teeth the enamel is equally thin and frail as a rule in the linguo-gingival region. If cohesive gold and mallet blows are used, the impact cracks those thin enamel walls, or by bridging, fail to hermetically seal the dentine from moisture.

Why does this beget a failure? Because in the cracked enamel, there are interstices to be filled with oral fluids passing to the subjacent dentine, or in the bridged column of gold lying over the cervix and along the margins, answering to and taking the place of the lost enamel, there are minute burrows and channels into and through which by capillary attraction the oral fluids are drawn. In either case homes are builded for the animalculæ and moisture supplied for their culture, more to their taste and nourishment than those that Drs. Black or Miller can make, without which moisture neither animalculæ can breed, or caries of dentine progress.

In other words, the new enamel of gold, that should be coterminous with sound enamel of tooth structure, and impervious, is so violently thrust upon the margins as to crack and disintegrate them, or so constructed as to be spongy, porous conduits to the dentine, instead of impervious hermetical shields, covering and protecting it.

If other materials are used, with perhaps one exception, they either shrink, absorb moisture and retain it, or break down and wear away.

Must a filling to be a success, exclude all moisture? Most assuredly all moisture from without the tooth. The humidity that is found in the dentinal tubules only, is not productive of caries.

The late Dr. Hale, of St. Louis, who in his practice as an operator became so noted, and was so successful, used soft gold only, and hand pressure alone. The plugs inserted by him clung to the cervix and margin for forty years and more, and when at last removed came away in ribbons unfolded, dry and bright at cervix, but broken down and worn away from crown and contour by long occlusion. Two of his pluggers, said by his son to be especial pets, are here, labelled "Dr. Hale's Hand Pressure Pluggers." It is to be noted that of plugs of "cohesive gold" that remain longest in place, commence to yield, or rather the tooth does, at cervix of margin of both, and that occlusion has little effect in wearing. *Prima vista* and *a priori*, the soft gold should underlie and the cohesive gold should superimpose.

Observation and experience, as well as reasoning from "first sight" and "cause to effect," name this course *the best.*

Take for example a left inferior bicuspid with posterior approximal cavity from crown to margin of gum, devitalized "ganglion" or "pulp," chamber and root canal putrescent, dental ligament inflamed, but with no "fistulous opening," what course is "best"?

First—Diagnose the case, noting systemic peculiarities, as, whether patient is plethoric or anæmic, scrofulous or syphilitic; whether there is acute or chronic apical, calcic or phagedenic pericementitis, so that apt general or local treatment may be given.

Second—Isolate the tooth with rubber dam, and, if not too sore, prepare the cavity for filling. Open freely into the pulp chamber, and "rim out" the chamber entrance to the root canal. Dry the chamber with absorbent cotton. Thrust a piano wire bristle into the canal to the apex—*not through it.* Flood the chamber and canal with fresh or well kept per-oxide of hydrogen, and assist ingress of the per-oxide by a churning motion of the bristle. If the per-oxide is good, and there is present any pus or septic matter, the medicine will attack it, foam and "boil," and bring to the surface the débris of the canal. Repeat till foaming ceases. Dry the chamber and canal as well as may be with absorbent cotton, then flood the chamber and canal with alcohol, in which hydro-naphthol (10 grs. to the oz.) has been dissolved. Then *dry* the cavity (with emphasis on the word dry), using compressed air blast, hot air, or a heated probang. The alcohol has absorbed the moisture along the canal and called it from the apical foramen and from the mouths of the dentinal tubuli. Again flood the chamber with the preparation of which the following is a good formula:

℞ Ol. Caryoph.
Ol. Cassia aa. ℥ij.
Hyd. Naphthol grs. xx.
M.

In this example do not permanently fill the root canal at first sitting, but gently pass a shred of absorbent cotton into the canal through the oils, and seal the chamber and cavity with cotton moistened with Sandarach varnish. The utmost care should be taken not to pump or force the oils through the apical foramen, and on no account force air through the canal into the soft tissues.

The latter is an embolism which nature will resent with all the fierceness of acute inflammation. Dismiss your patient with directions to return *at once* if severe pain ensues. A little "soreness" need not be heeded. In any case, to return in three days.

If pain supervenes before the three days, remove the dressing and proceed precisely as at first, repeating till the sealing can be borne three days, and administer to the patient, if scrofulous or syphilitic, Mercurius Vivus 3d, x, 4 grs., every three hours till about forty grains have been taken. If pain is intense and swelling supervenes, administer silex (homeopathic 3 x) instead of Mercurius. When the third day's sealing has been borne without serious inconvenience, proceed precisely as before (except that the peroxide need not be used), drying, flooding with oils and hydronaphthol, avoiding hydrostatic pressure and embolism of air, and the root canal is ready to be filled permanently. In passing, if there are apical fistulæ the root canals may be treated and filled at the first sitting. And so, if the tooth has been devitalized, on the successful removing of the nerve the canals may be filled immediately. A further digression may be pardoned to give just tribute to Prof. A. W. Harlan for his investigations and first presentation to the profession of the use of the oils above named, and others of great value; also for his teachings as to antiseptics and germicides in like cases.

Why so much stress upon drying the canals, and on the use of the oils? Because moisture favors germ growth, fermentation and decay. Drying prepares chamber, canal and tubules for absorption of antiseptic and oil, and oils from their known aversion to water favor sealing and preservation.

What shall the root canal be filled with? Copper amalgam in the apical portion, and sufficient to seal it from the seruminal fluids that, like hated serpula are creeping and gliding where they can only poison and irritate. In the remaining portion, with gutta percha, cements, wood, lead, or even with cotton wool and cosmoline—the new discovery of the wise men of the East. (As if cosmoline would resist absorption for twenty or forty years, and prevent the filtering of fluids through the foramina into and among the fibers of cotton, ultimately to ferment and smell). It matters little if the foramen be *sealed* what lies between it and the chamber.

Dr. N. T. Hewitt, now of Chicago, formerly of Peoria, Ill., has for years used amalgam alloys for root canal fillings with gratifying results, but since 1887 has used copper amalgam.

(*Case*). Paul Heermans, of No. 723 Grove Street, Evanston, Ill., has twenty-five root canals now in his mouth filled with copper amalgam, and he thinks it "the best." He has permitted the use of his name and residence for the benefit of the doubting. How shall it be inserted? Heat a small quantity of pure fine grained copper amalgam on a spatula, or in a clean wax spoon over a small alcohol flame till beads of mercury appear plentifully on the surface. With the warm spoon or spatula rub the amalgam to a soft paste on a polished hardwood surface, or marble slab, or piece of cardboard, and it is ready for use. With the chamber and canals flooded with the oils pass the amalgam into the canal, and along it to the foramen, using piano wire broaches or bristles of appropriate size and shape for the purpose. *Fill the canal at the apex* through the oils. Intelligent mechanicians, as all "best" operators are, only need to be told thus much, and a little practice will bring the sealed foramen "educated touch," the rapidly convalescing denture, and entire freedom from anxiety as to the result. Canals that cannot be explored with fine broaches as shown, may be safely ignored if the pulp chamber is rendered aseptic as described. Nature will seal the foramen or the minute nerve will heal under the amalgam, or it will mummify and give no trouble beyond a little soreness for a day or two.

After the canal is filled, when may the crown be permanently filled? At the same sitting, but better after a month's interval.

There is nearly always a little "tenderness," "lameness" or "soreness" of the parts. And if gold be used the pressure and malleting are annoying to the patient, and inconvenience to the operator.

If the foregoing directions are followed there need be no fear of inflammation or ulceration following a finished operation. If plastics or alloys are used instead of gold, of course the entire work may be done at one sitting.

Should a devitalized root and chamber be crowned with gold? By all means if the patient can afford the expense. Should a crown be badly broken down, or frail in its walls, a permanent matrix should be applied. The matrix may be of gold, silver, platinum, or platinum faced with gold. It requires but ten or fifteen minutes' time to measure the tooth, cut, form, solder and burnish a permanent matrix ready for driving on. When placed, twenty or thirty minutes will complete the filling ready for dressing and polishing.

Why choose gold for the filling even in frail teeth? Experience has shown that it has preserved tooth structure longer than any other material. It is indestructible; it is so soft that it can be whittled; so malleable that it can be beaten out to any desired thinness; so plastically non-elastic that it can be burnished over edges regular or uneven, remaining where burnished; air and moisture do not attack it.

Tooth structure and soft tissues tolerate its contact; it gives off no odor, or metallic taste, is not a subject of electrolysis in the mouth, and when clean has an astonishing cohesiveness.

What kind of gold is best? There is but one kind, and that is gold. What form of gold is best? One thousand fine gold, beaten out to about number 4 foil and Watts crystal No. 2. The foil may be rolled into cylinders (as Williams') into pellets (as Pack's) or into ropes (as Rowan's). But be sure that no baser metal-alloy is commingled, and that no film or coating is spread upon the leaves so that it cannot be annealed into cohesiveness; that no commingling of metals be resorted to make "plastic" gold.

Should not the heavier numbers and plastic gold be used?

Not for business. If you wish to play, and have a clientage that will enjoy your frolic, then by all means begin with plastic and end with No. 60 driven home by a maul, by hand, or blows by the million from an electric or Bonwill mallet.

What then is best? Most economical and as good as any are the standard gold foils and the Watts Crystal No. 2, to be folded and cut as follows: Fold the foils each leaf four times on itself, place upon the foil-crimpers and "crinkle" to a square one inch across, then draw the square to a pencil to one inch by 1/8 of an inch. With a sharp knife cut these pencils into cubes 1/8 by 1/8 or 1/8 by 1-16 of an inch. Parallelograms as thick or thin as wished may thus be made. Crystal taken as it comes in boxes may be cut with a sharp knife or razor into slabs or boards 1/4 or 1/8 inch thick. Then into scantling 1/8 by 1/4 or 1-16 by 1/8 and the scantling cross cut into cubes. Thus folded and cut the foil cubes and the crystal are beautifully soft, almost plastic. To make either or both cohesive, almost to troublesomeness, place these cubes or squares between two sheets of mica, hold over a Bunsen burner flame or ærated gasolene, or heavy alcohol flame, or argand kerosene flame, till thoroughly hot, even to redness ; leave the gold between the mica sheets to cool slowly. It is ready to place in the cavity and and condense. The Chicago Dental Manufacturing Company's gold costs us $27 per oz., White's untrimmed, William's untrimmed the same. Watt's Crystal $32 per oz., Cylinder, Pellets, Wolrab, Rowan & Co., $29 to $40 per oz., a difference worth saving. Any good dental assistant can easily learn to fold, crimp, cut and anneal gold as above described. How should gold be packed into the cavity to preserve it from further enlargement and breakage ? In the tooth named, if the crown walls are solid and the matrix can be well placed and held, use one.

First : place a cube or its equivalent of *soft gold* into the bottom of the cavity large enough to cover the floor and overhang the cervix a little. Carry the matrix close to the tooth down over the cervical floor, driving a film of the gold along with it upon and over the cervix, and secure the matrix. Place cubes of soft gold on the floor of the cavity close to each of the margins, patting them lightly in place, and a fourth on the center of the floor.

With a hand Herbst point, less in size than the diameter of the cavity, press firmly upon this last cube, at the same time give a roll-wiggle-and-twist motion to the instrument to burnish as much of the gold as possible now in the cavity. With a slim curved point press upon the burnishing center to prevent movement. Then with a thin oval faced smooth hand Herbst point, burnish the gold down upon the cervix and down along the margins close against the matrix. Repeat till the cavity is one-half or two-thirds filled and you know that you have sealed the cervix and margins nearly to the crown. Then with hand pressure pack cohesive crystal or foil to the level of the under portion of enamel. Now for the first use the mallet, hand, or electric, or engine, as suits you, to condense around the borders and near to the matrix, using oval point serrated pluggers. Condense sufficiently to bear the strain of mastication, and seal the borders, with emphasis on the word seal. Build thus with the mallet cohesive gold till you come to the last layer.

For this layer cover the plug already made with crystal unannealed, cubes of soft gold or thin squares of cohesive gold foil.

With engine Herbst point of quartz, onyx, or blood-stone, driven at high speed, burnish this layer down upon the enamel, edges and underlying gold. If you have builded carefully this will give a good enough finish for a grinding surface. Burnish as beautifully as you please and with strips, discs and burnisher finish the approximal wall. This will preserve approximately decayed teeth.

Are any cautions to be observed in this mode?

Yes; in the preparation of the cavity, and do not press too heavily in burnishing against the cervix and margins. An unhatched chick can burst from a shell within, that will bear the mother hen, weighing pounds from without. Care must also be taken to well anchor the cohesive gold upon the soft, an achorage easily and securely effected. Why not use the mallet all the way? It is dangerous to cervix and margins, and not needed till near the surface.

Dr. Royce says "An electric mallet is worthless in a cavity," and the hand mallet is as worthless and dangerous.

If front teeth are to be filled, how proceed? Upon the same principles as to lingual wall and gingival margin. Burnishing soft gold on to them and malleting cohesive on front and contour.

If the patient cannot afford gold in concealed cavities, what is best? Pure copper amalgam, if well placed and retained till a crystallization takes place. Why not as good as gold for such cavities? Because copper is a metal that oxidizes. Oral fluids attack it on the surface, and a gradual cupping or erosion will result. Case—Two Scotch girls each had two inferior sixth year molars filled seventeen years previously, with copper amalgam in Edinburgh, Scotland. Enamel walls remained perfectly sealed and no decay was present, but the erosion had almost bared the central dentine, so cupped out with the plugs. Erosive cupping does not thus occur, except on grinding surfaces, or where a tooth brush would equally wear enamel and dentine.

How is copper amalgam made, and what impurities must be guarded against? Dr. Pitt, who is with the writer, furnished him with his method of manufacture followed in the sample shown, and in that used by him and the writer in the latter's office. It is as follows:

Get a 5 x 7 "Daniel Cell" of any electrical supply company. In the jar containing the copper element put from three to five pounds "re-distilled mercury," being careful to have the copper element in contact with mercury. Fill the jar with water. Put into it a handful of crystals of sulphate of copper. Fill the porous cup containing the zinc with water, adding a few drops of sulphuric acid.

The zinc should be previously amalgamated by washing its surface with a dilute solution of sulphuric acid, then amalgamating the zinc thoroughly by application of the mercury. Connect the poles of the battery. Supply enough sulphate of copper to keep a saturated solution. Every day draw off about two-thirds of the solution from the porous cup and re-fill with clean water. If the surface of the zinc becomes dirty, put it under a faucet and wash with a brush. The chemical reaction in the cell being to precipitate crystals of metallic copper on the surface of the copper element. The mercury amalgamating the crystals as fast as deposited. In the course of four or five days the mercury will be nearly gone from the bottom of the jar, and be found on the surfaces of the copper element. When it is ready to work, take a good size wedgewood mortar, with a strong knife scrape the amalgam from the copper and the outer sides of the porous cup into the mortar. Put the mercury remaining in the bottom of the jar with it, and you will have a coarse crystalline mass more or less discolored by copper salts.

Before doing this take off your gold rings. Fill the mortar one-half with water and grind the amalgam with the pestle. Wash in this way three or four times. Wash again with a ten per cent solution of sulphuric acid. Wash the acid out with fresh water. The mass is now ready for the removal of surplus mercury.

Take a piece of unbleached drilling, 18 to 20 inches square, place it with its center over the mouth of a cup or bowl, place the mass in the cloth, take it up by the corners and by twisting ring as dry as possible with the hands. Then place the mass into a brass or German silver cup or box. Do not use tin or iron. Heat over a Bunsen burner or alcohol flame till it ceases to explode or pop by evaporation of the moisture, and the surface begins to change color. Cover the box with a sheet of mica, so that particles will not be blown from the cup when the heat is applied.

Empty into the mortar previously wiped perfectly dry. Grind with the pestle. This will break down the crystals, making it feel smooth when rubbed between the thumb and forefinger. Squeeze dry and heat, grind, and squeeze twice more. Wash again in the acid solution, and by repeated rinsings and grindings remove all trace of the acid. Heat once more, grind in the dried mortar, squeeze dry enough for use. This latter can only be determined by experiment. Spread out on a piece of clean paper, cut into squares suitable for use, and let it remain to crystallize. If found to contain too much mercury, it must be heated, ground and squeezed again. If too dry heat, grind and add a sufficient quantity of mercury. This will make a practically pure amalgam. Care should be taken that the mercury and crystals of copper used should be chemically pure, and the water used free from iron, sulphur or other contaminating minerals.

COST.

Daniel Cell	$1.25
Re-distilled mercury, 3 lbs	2.25
Sulphate of copper, 3 lbs	30
Sulphuric acid	05
	$3.85

It will make, as above described, about two pounds of amalgam, and leave remaining mercury nearly two pounds, which can be used again.

24 ounces amalgam, at $2 per oz	$48.00
Costing $3.85, less the mercury remaining, 2 lbs. at 75c—$1.50	2.35
Leaving to pay for labor and profit and your Daniel Cell for future work	45.65

How should it be prepared and manipulated as a permanent filling? Take a square of amalgam on a No. 20 S. S. White spatula, roughened on one side, or a stiff case knife, or a clean wax spoon, hold over an alcohol flame till beads of mercury exude from the cake and the color begins to change. With the warm spatula crush the amalgam on a card, a marble slab, or better, a polished surface of hardwood. Rub the amalgam till the crystals are separated, then to soften place the forefinger on the crushed mass and rub it briskly over the surface. If too soft squeeze out the mercury with chamois skin and plyers. When prepared insert immediately, and press home with as little force or hammering as will fill the crevices and anchorages. When once placed let it lie. Do not disturb the deeper mass, or you will have a measly surface, lacking that glossy brown that is the glory of the stuff. If a remainder of the mass is to be used in a second cavity, heat and work over, for though it is not injured in the least by repeated heatings; a change in the shape of the mass after crystallization has commenced is fatal to its best service.

If a quick setting of the plug is desired, and the amalgam is soft, after the cavity is filled place a cube of Watts' crystal gold lightly upon the surface, and it will drink up the surplus mercury surprisingly. The gold can be saved for melting and separation.

To contour securely, a matrix of rubber dam or rubber tubing can be improvised, and left on the tooth till the mass is hardened.

Genesis of Oral Deformities.*

By I. P. Wilson, D. D. S., Burlington, Iowa.

"'Tis education forms the common mind;
Just as the twig is bent the tree's inclined."

The plastic mind of a child—the tender twig of a tree or a shrub—the pliable bony structure of a human being while in a state of growth and development may be shaped and moulded like clay in the hands of the potter; and this moulding process can only be carried on successfully during the period of immaturity when there is but little or no resistance.

We are impressed with this truth more and more as we look around us and see on every hand that young minds are being moulded—human bodies shaped—and nature herself often turned out of her course by the interfering hand and mind of man.

That the human mind is what it is, to a very great extent, from the training it receives, will scarcely be questioned.

The physical organism, also, is shaped to please the perverted taste of man. The savage binds a board upon the head to flatten the infant skull, while civilized America places a mechanical appliance around the waist to remodel the walls of the thoracic cavity, thus causing a deformity of the most beautiful object of God's creation.

The little twig is easily turned aside when an obstruction is placed in its way, and the deformed tree of the forest is the result.

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* Read before the Iowa State Dental Society, May, 1889.

Most of the deformities we see around us were produced by trivial causes during the period of growth and development.

It is doubtless true that a large proportion of deformed dental arches have their origin in parental causes, but it is not my purpose in this short paper to enter the broad field of pre-natal influences, for I am sure that I can add nothing to the writings of Patrick and others on this important subject. I have, however, thought that it might be profitable for us to consider some of those influences which produce irregularities of the teeth, which have their origin in *accidental* causes subsequent to birth, and consequently within our reach and under our control.

That facial deformities, as well as irregularities of the teeth, are very frequently caused by improper management of the first and second sets is a matter of grave consideration to us as a profession.

Before a tooth is extracted, whether it be of the first or the second set, it is of the utmost importance that we consider well the ultimate result of the operation. No one can afford to lose any one of the six anterior teeth (especially of the upper jaw), in order to make room for the other five, for in so doing, nature's gradation of the teeth has been destroyed so that harmony can never again be restored. (See Fig. 1.)

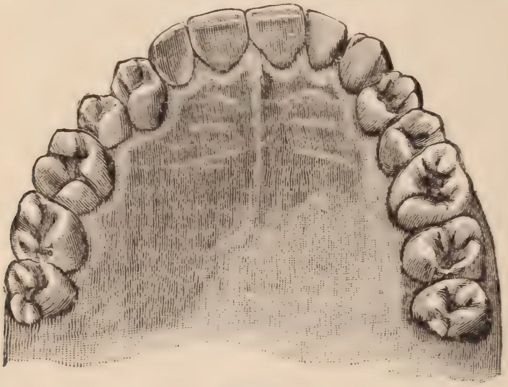

Fig. 1.

It will be observed that the right superior cuspid has been extracted—the space has closed up, leaving the first bicuspid and the lateral incisor in close contact.

We notice at once the imperfect gradation of the teeth—the proximating surfaces of the central incisors have deviated from the median line—the canine eminence has been destroyed, the arch flattened, and the symmetry of the mouth greatly impaired.

The removal of the first molar on one side only, if done at an early age, or before the second molar has emerged, will almost certainly detract from the appearance of the entire set. The central incisors will not divide at the median line, and that side of the arch will become a little smaller than the other, and will have a somewhat flattened appearance. The palatine arch will also have lost its symmetrical form—the maxillary bone on that side being smaller than the other. (See Fig. 2.)

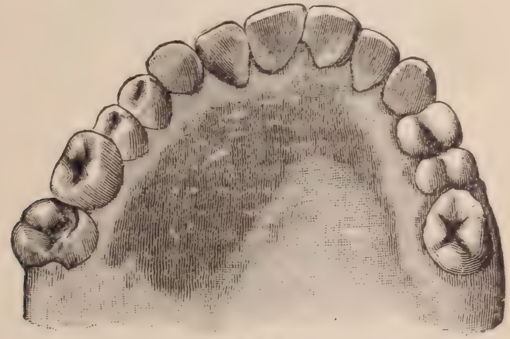

FIG. 2.

Here we find the second molar standing in close contact with the second bicuspid, the first molar having been extracted before the second was erupted. When a vacancy is created in the dental arch, nature always attempts to close it up, and this is accompanied by a general drifting of the teeth in that direction. If, however, the teeth on both sides of the vacancy are perfectly articulated with the opposing teeth, they are locked in their position so that sufficient change cannot take place to close the space, but as seen in Fig. 2 the second molar took its place in the arch after the first molar was extracted, and so gained its present position rather than the one nature had intended.

The premature extraction of a deciduous tooth may cause irregularity of the permanent set, and the extraction of one of the permanent teeth to correct the irregularity will almost certainly bring about conditions similar to those represented in Figs. 1 and 2.

The premature extraction of deciduous cuspids is a fruitful cause of oral deformity. Fig. 3 represents a case of this kind. It will be observed that the space has entirely closed, the permanent lateral incisor and the first deciduous molar now occupying the entire space of the extracted tooth. The deformity, however, is seen most in the incisor teeth. The cause of this unfortunate state of affairs should be the point of special interest to us.

The following history of the case was given me by the child's mother. She informed me that her husband was a physician—that there was no dentist in their town, so the doctor usually extracted their children's teeth. Discovering that their little girl's two front teeth were somewhat crowded as they were emerging from the gums, the father thought best to extract the temporary laterals. This resulted in straightening the centrals, by their taking possession of a part of the space belonging to the permanent laterals. When these teeth were erupted, they were of course quite irregular, being crowded out of their proper position, and to obviate this difficulty the fatal mistake was then made in extracting the temporary cuspid, and we have the result as represented by Fig. 3. The parents were well satisfied with the present result, not realizing that the way had been systematically prepared for an unsightly deformity. Here we find the permanent cuspid has been robbed of its proper place in the arch, and when it makes its appearance (if outside of the arch), will be denominated a "tusk," and the deformity will be complete.

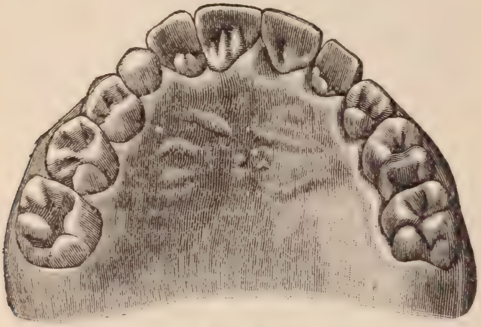

FIG. 3.

The extraction of this displaced cuspid when it makes its appearance, will leave the jaw in exactly the same condition as on one side of the case represented in Fig. 1.

Another deformity resulting from the premature extraction of the deciduous cuspid, for the purpose of making room for the permanent lateral, is represented by Fig. 4.

The lateral incisor has drifted into the vacancy that has been created, thereby taking possession of territory that properly belongs to the undeveloped cuspid.

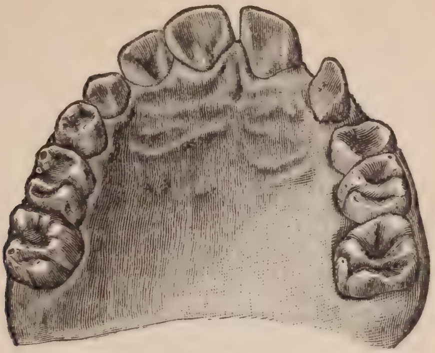

FIG. 4.

Had this case been left to itself after the mistake of extracting the deciduous cuspid had been made the malposition of the teeth when fully developed would have been a most unsightly oral deformity. *The mistake of a moment may cause a life-long deformity.*

Irregularities produced by the premature extraction of the deciduous molars are far less common, as the jaws at that point are almost unchangeable through life. If, however, the deciduous cuspids be extracted at or near the same time as the deciduous molars, some strange irregularities may take place. The undeveloped cuspids and bicuspids have nothing left to guide them into their proper positions, and when thus left to develop at random, they sometimes get badly mixed as may be seen in Fig. 5.

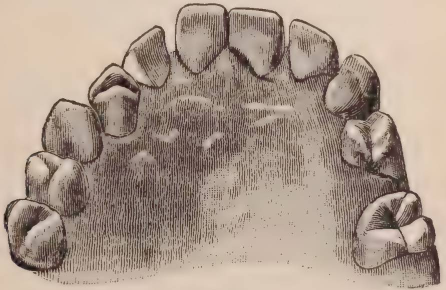

FIG. 5.

Here we find a very anomalous state of affairs. The cuspid has forced itself into line between the two bicuspids, and although the arch is full and the curve almost perfect, yet the gradation of the teeth is imperfect, and consequently their harmonious arrangement is destroyed.

There is another deformity that deserves at least a passing notice, for I am inclined to think that it comes under the head of accidental causes. In the next cut there is very good occlusion of all the molars and bicuspids, while the cuspids and incisors stand apart like a fish's mouth when partly opened. (See Fig. 6.)

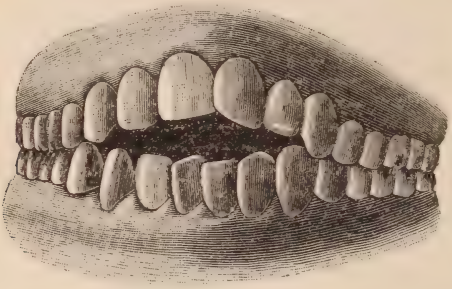

FIG. 6.

In getting the history of such cases I have usually found that in infancy the person was addicted to the habit of sucking the thumb. It is reasonable to suppose that the pliable inter-maxillary bones with their very frail attachments to the superior *maxillæ* may be easily pressed forward and molded into a deformity by the leverage of the thumb, and that the anterior portion of the lower jaw may be somewhat depressed by the almost constant weight of the thumb and hand, thus causing the deformity shown in Fig. 6. A hint to mothers and nurses with regard to this important matter would not be out of place.

A facial deformity is sometimes produced by the extraction of two teeth, at an early age, from the upper jaw, one from either side. If the lower jaw is well developed and contains the full set of teeth the occlusion will be imperfect, the lower front teeth will articulate with the cutting edges of the upper, or it may be will pass in front of them. This state of affairs will produce a "*dish face*," and a central feature has been marred for life. The upper jaw will be smaller than the lower, the upper lip will lose its prominence in the canine region and will have a sunken appearance, causing the face to appear tame and expressionless. The family and friends may charge Providence with the deformity, but the observing dentist will render a different verdict.

It has been observed by Drs. Haskell and Talbot that a large majority of the deformities of the jaw exist on the left side. Since having my attention directed to this statement I have examined a large number of models in my possession, and find as they have declared that nearly all of the deformities are on the left side. Why this is so has not been satisfactorily explained.

The most that has been written upon the etiology of oral deformities refers to pre-natal causes, and a study of that phase of the subject has been one of fascinating interest to us all.

But it has been my purpose in the preparation of this paper to call attention only to that class of oral deformities which have their origin in malpractice, or in accidental causes subsequent to birth.

With this practical view of the subject before us I feel impressed with its importance. We cannot afford to make mistakes that will destroy the harmony of the features and mar the beauty of the young men and maidens who are being sacredly intrusted to our professional care.

The thoroughly educated dentist will rarely make such a mistake.

PROCEEDINGS OF SOCIETIES.

MINNESOTA STATE DENTAL ASSOCIATION.

(Concluded from page 575.)

Dr. Lawrence P. Leonard, of Waseca then read a paper on "Nitrous Oxide, from a scientific and practical point of view."*

DISCUSSION.

Dr. Jenison: We use anæsthetics to avoid nervous shocks, and as far back as the second century we find them used. The principal ones now in use are ether, chloroform and nitrous oxide. Chloroform I will not use for any one, although it has met with extended use. I think no dentist has the right to use chloroform, and the Courts will not sustain him in event of an accident. With ether I fear comparatively little danger, but it is unpleasant to use.

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* See page 610.

In nitrous oxide we find a safe anæsthetic. I would advise its use in all painful operations, especially with children.

In the use of nitrous oxide I do not think organic troubles are as important, as sometimes argued, but we must pay attention to them. I cannot agree with the doctor as regards its action on the heart, but think more of diseased condition of the lungs. We cannot with impunity take any risks. Gas comes nearer to being perfectly safe than anything else. I have seen more serious results from taking gas when nervously prostrated than from any organic trouble, and in my own practice I always guard against it. In one case it took over two hours hard labor, with use of electricity, before the patient was able to sit up. Any one who intends to administer an anæsthetic in any form whatever should certainly make a careful study of the subject.

Dr. Avery: During the short time I was practicing dentistry I had occasion to use nitrous oxide very frequently—on an average three or four times a day. I believe the cause of a good many failures in the effect, or in the operation, of administering nitrous oxide arises from the fact that the gas-holders do not retain enough of the gas to have a thorough effect on the patient. They allow him to breathe out of an empty gas-bag. He breathes nothing—can get nothing to breathe. I have found the use of fifteen, twenty or thirty drops of chloroform with nitrous oxide to work well. With me, patients come out from under its influence much better than when nitrous oxide is used alone. I would recommend the use of a gas meter, in which the gas escapes over water. In this way there is not the same amount of danger as in other methods.

Dr. Jenison: In regard to the remarks of Dr. Avery—I nearly always use nitrous oxide under pressure. In regard to mixing chloroform with the nitrous oxide, I should say *no*, with a great big N, every time. I do not believe in mixed anæsthetics of any kind. Five to ten drops of chloroform is sufficient to destroy life. I have never been guilty of using that mixture but once, and the effect was unpleasant. I think the further we keep away from these mixed preparations the better for our patients. Nitrous oxide is good enough for simple operations.

Dr. Hewitt: I wish to ask in cases where exhaustion has been brought on by loss of sleep, what effect has been observed by a slight dose of liquor given prior to giving the nitrous oxide?

Dr. L. P. Leonard: I never tried that particularly. If a person was in a very exhausted state a little alcohol would help him —but not too much. As a general thing I think it best not to give liquor.

The subject was passed.

Drs. W. J. Brady, of Minneapolis, David H. Day, of Duluth, F. E. Hanson and E. M. Johnson, of Wadena, were elected members.

The Committee on Legislation appointed at the last session made the following report:

We have not a very long report to make. You are all familiar with the resolution, and it is not necessary to enter into a lengthy report. There are several points, however, to which I wish to call your attention.

First, you will remember my motion was for the purpose of amending the old law, to the effect that those having diplomas should have to undergo examination. This motion was the origin of the "Bill for an Act to Regulate the Practice of Dentistry in the State of Minnesota." The committee appointed to gain the desired end found the old bill so defective that, on the advice of the legal profession we thought it best to construct a new law, and so the committee worked to that end, and aimed to get as perfect a law as possible. We have the best legal advice—have spent more than three months' time on the work and believe the law comes very near being the ideal law. Although to commence with we encountered some opposition, and from unexpected quarters, owing we think to a misunderstanding, still, as soon as this was cleared up we have had the hearty support of the best men in our organization.

I wish especially to remember those who worked with the committee in this matter. Drs. Davenport, Merry, Merrill, Lyon, Bailey and others, who gave us their sympathy and support.

Now it is a law I feel very proud of. I did a great deal of hard work preparing it, and I believe that if the members will stand by it the amount of good it will do can scarcely be estimated.

There is one point I specially wish to mention in this report, and that is the importance of keeping good men on the Examining Board, and giving them support and assistance in carrying out the law's requirements. It is a very important thing that the right men should be in the right place.

The committee has been to some expense individually, and for certain small bills we have incurred we have tried to keep the expenses down as much as possible. Personal expenses we make no mention of. The expense of type-writing, paid to Mr. Bowers, was $9.40 for having Dental Law copied. The lawyer who worked so hard in constructing this law would not make any bill for it. I think the members of the society should not accept this work for nothing, and should give him say $35, in recognition of his services.

I do not wish to complete this report without remembering the gentleman who did hard work for us in the Legislature.

Mr. Davenport introduced the bill and worked hard for it. Mr. John D. Smith gave it his special attention. Mr. A. J. Whiteman and Mr. Ives did special work for it.

I would recommend a resolution from the Society thanking them for their work.

The report was adopted, the committee given a vote of thanks, and the Secretary instructed to furnish a copy of the resolution to the different members.

The following resolution was introduced by Dr. Bailey and unanimously adopted:

Resolved, That in consideration of the successful passage of the new act to regulate the practice of dentistry in this State before the last Legislature, that a vote of thanks be extended the committee of this Association, whose unselfish, untiring and wisely guided efforts have been the means of giving to our State the best law at present in existence, for the purpose of elevating the standing of our profession, and for the safety of a patient public, and that a copy of this resolution be presented to each member with the assurance that their services have been and are most deeply appreciated by us all.

During the meeting a paper on "Regulating Teeth" was read by Dr. E. H. Angle, of Minneapolis. Also a paper on "Dental Art," by Dr. A. O. Hunt, of Iowa City, Iowa.

Dr. C. H. Robinson, of Wabasha, then read a paper on "Abrasion and Erosion."* The Secretary then read a paper by Dr. Louis Ottofy, of Chicago, on "Implantation."†

Dr. G. V. I. Brown was elected president; Dr. L. C. Davenport, vice-president; Dr. C. H. Robinson, recording secretary; Dr. M. G. Jenison, corresponding secretary; Dr. H. M. Reid, treasurer.

Minneapolis was selected as the next place of meeting.

Drs. Leonard, Bailey, and Cruttenden were elected an executive committee. The names of Drs. Lyon and Goodrich were voted to be recommended to the Governor for appointment on the State Board of Dental Examiners.

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* See page 597.

† See page 618.

The President then announced the following committees for the ensuing year:

PROGRAMME COMMITTEE.—Literature, Dr. Martindale; Therapy, Dr. Stearns, of Zumbrota; Instruments and Materials, Dr. Brady, of Minneapolis; Clinics, Dr. Clark.

MEMBERSHIP COMMITTEE.—Dr. Leonard, Minneapolis; Dr. Merrill, Albert Lea; Dr. Clement, Faribault; Dr. C. H. Goodrich, St. Paul; Dr. W. H. Crary, St. Paul.

PUBLICATION COMMITTEE.—Dr. Jenison, Minneapolis; Dr. Metcalf, Duluth.

Adjourned to meet in Minneapolis, Minnesota, the second Wednesday in July, 1890.

AMERICAN DENTAL ASSOCIATION.

The twenty-ninth annual meeting of the American Dental Association was held at Saratoga Springs, N. Y., August 6, 7, 8 and 9, 1889. About one hundred dentists were in attendance during the meeting.

Dr. C. R. Butler, the president, in his address, highly commended the course adopted by the young men now entering the profession, by first securing a good dental education in one of the many dental colleges of the United States. He believed that the next generation of dentists will, in every way, be a credit to those who are now engaged in raising the standard of our profession.

Section II on Dental Education, Literature and Nomenclature, was instructed to prepare and present at the next annual meeting of the association a plan, in pursuance of which, the work of the Sections of the association may be simplified and made more effective.

The Section on Histology and Microscopy presented a paper by Dr. Frank Abbott on the "Development of Dental Tissues." The essayist reviewed the history of the study of the development of the enamel, giving the results of the investigations conducted by Kölliker, Tomes, and others. He described the development of enamel as studied in the fœtus at six months, illustrating the successive stages of development by means of drawings.

In the course of the discussion Dr. Wm. H. Atkinson stated that he did not believe that photo-micrographs were necessarily the most desirable means of reproduction, for the artist can omit from his drawings what he does not wish to present. Dr. W. X. Sudduth believed that the reproductions made by means of photomicrography were the most satisfactory known.

Dr. J. Ward Hall, of Shanghai, China, who was present at the meeting was invited to state the condition of dentistry in the far east. He stated that the Japanese dentists were far in advance of any in Asia. They are skillful mechanicians; while in China the practice of dentistry is crude and practiced to but a limited extent among the natives. There are a few American dentists who practice in China and Japan. To his knowledge nine are located in the largest of the seaport towns of China. In India there are none, while Egypt has many American dentists, of whom nearly all are fairly successful.

The report of Section V on Materia Medica and Therapeutics was made by the Chairman, Dr. A. W. Harlan, who read a paper on "Materia Medica and Therapeutics."

The paper was a plea for the essential oils for disinfecting pulpless teeth. The essayist formulated a series of conclusions regarding the desirability of using this form of medication instead of coagulants. The main features of the paper may be found in the transactions of the Illinois State Dental Society, 1889.

In the discussion, Dr. W. C. Barrett asked to be told the difference between the oil of cassia and the oil of cinnamon, while Dr. W. P. Horton desired to know whether in the experiments those oils were used in combination or separately.

Dr. Harlan stated that the oil of cassia was made from the bud, while the oil of cinnamon was derived from the bark. Cassia is cheap, more abundant and the most potent in restricting the growth of micro-organisms. The experiments were made separately.

Dr. Barrett: We are too apt to multiply remedies; I do not comprehend any material difference between the oils of cassia or cinnamon. I favor a simplification of remedies, and am of the opinion, that the cheapness and abundance of the cassia is due to the fact that it grows in a large territory of China.

Dr. Atkinson finds a great difference in the cost—the oil of cassia costing less than $2.00 per pound, while the same quantity of the Ceylon oil of cinnamon costs from $12.00 to $16.00. As to the effectiveness of either, there is considerable doubt, for we do not know when microbes are really destroyed.

In the report of Sec. VI., Dr. H. A. Smith presented statistics gathered by the section in regard to the subject of implantation. The report was a continuation of the investigations reported upon at the last meeting. Dr. Younger reported on twenty-six of his earliest cases; of these three had failed, two were lost by accident, two were doubtful and nineteen were successful. Dr. Smith believed that the study and further investigation of the subject will place implantation among the feasible dental operations. Dr. Hugenschmidt, of Paris, had reported six cases, of which two had failed and four were successful. He uses old teeth, and does not believe that there is any advantage in using fresh teeth. The opinion seems to have been entertained that it was necessary to use freshly extracted teeth. The experiments, however, indicate that there is no special difference, the percentage of success being about equal.

Dr. McFadden, of California, reported thirteen cases, all successful. He fills the apex of the root canal with gutta-percha, and employs bichloride of mercury as a sterilizer. Dr. W. N. Morrison reports twelve cases, nine dried and three freshly extracted teeth, of these all but two are doing well. He fills the roots with gutta-percha and the apex with gold. Dr. Ottofy reported thirty-eight cases, of which six were considered experiments, leaving thirty-two *bona fide* cases, and of these twenty-six are successful and six have failed or are not in good condition.

Dr. Ottolengui published an article in the March, 1889, number of the *Dental Cosmos*, which is exhaüstive and valuable reading for those who contemplate performing the operation. The possible dangers are fully dwelt upon. Dr. Smith referred to the favorable results which follow transplantation, when the tooth to be transplanted is not placed into the socket until after retrograde metamorphosis has taken place. There seems to be no good reason given why the ends of roots should not be trimmed.

Dr. E. S. Talbot read a paper on the "Classification of the Types of Irregularities and Maxillæ," exhibiting cases containing specimens of each class and type. The investigation of this subject has been meager. The arrangement of the classes was based on the examination of 2,000 cases.

In the course of the discussion of these papers, Dr. Horton spoke of the value of these records in reference to implantation, and expressed the belief that it was best to perform the operation immediately after the extraction of a tooth, if possible.

D. S. C. G. Watkins mentioned three cases in which teeth were implanted into sockets from whence teeth had just been extracted, and these cases were entirely successful.

Dr. John S. Marshall defined the distinction between replantation and transplantation, and stated Dr. Younger's theory of the revivification of the pericementum.

Dr. C. N. Pierce: Evidence is in existence in proof of the fact that teeth, whose roots are covered with dried pericementum are as successful as teeth whose pericementum is fresh. I believe that the presence of pericementum is important, for it acts as a sponge graft. Pericementum is essential, whether it be fresh or dry. In a case of the perforation of the antrum, there was spitting of blood two days after the operation, but both the tooth and antrum healed and are well.

Dr. G. L. Curtis holds a different view of the importance of pericementum. He scrapes the roots, taking off the pericementum, and is successful. The causes of failure were due to accident.

Dr. P. T. Smith stated that Dr. Younger desires the presence and good condition of the pericementum, and he also wishes to know the history of the tooth. He sterilizes perfectly, excises the root if necessary. He is particular about the perfect filling of the roots, and his success is due to his *utmost* care. Dr. Smith believes that anchylosis is the mode of attachment.

Dr. Barrett: I hold just the opposite view of that of last speaker as regards Dr. Younger and his performance of the operation, precautions, etc. While Dr. Curtis is not particular about the selection of the tooth, he is very careful to cleanse the root, and to sterilize it. We do not fully understand the subject because we do not yet know the principles involved.

Dr. Peirce stated that the color of the teeth was due to the fluids of the body, and that the implanted teeth assume the same color as its new neighbors.

Dr. M. L. Rhein objected to the term "success." He does not believe that sufficient time has elapsed since these operations were performed to justify the use of this term.

Dr. Ottofy held that success in dental operations is entirely measured by longer or shorter periods. While an operation which yields satisfactory results for a year may be considered successful, another operation would have to be of service for several years to be entitled to approbation. In this sense implantation is successful for four years. As to the necessity for the pericementum, he strikes a golden mean between the two extremes, neither caring whether it is entirely perfect, nor removing what is present. Sterilizes with bichloride of mercury as strong as one in 500. Does not find any difference between an uncut or a trimmed root. Has perforated the antrum in three cases, with no unfavorable results. Fills the root canals with gutta-percha. Finds so much chipping and cracking of the enamel of dry teeth that he prefers to use roots to which Logan crowns have been cemented. Is satisfied that the implanted teeth do not assume the color of the new neighbors, but their original color. Has one case in which three teeth have been implanted and each of them was of different color.

Dr. H. A. Smith, in closing the discussion, requested all who practice implantation to keep careful records of their cases, and promised that the section would, from time to time, present what is new in relation to this subject.

The Association voted $500 to Section II, to be expended under its supervision, for the examination and tabulation of the condition of pre-historic skulls in the United States.

The sum of $1,000 was voted for the defense of one of the members of the Association, Dr. J. N. Crouse, who has been sued for $60,000 damages by the International Tooth Crown Company.

In the report of Section VII, on Anatomy, Pathology and Surgery, Dr. T. W. Brophy cited cases of Neuroma of the inferior dental nerve. In many cases where the teeth are lost, and the alveolar process absorbed, the mental foramen is near or upon the ridge, and the pressure of artificial dentures in these positions often give rise to the most intense Neuromas. He practiced in aggravated cases, excision of the nerve, the reaming out of the nerve canals in the hope of having the formation of osteoblasts prevent the union of the severed nerve-trunks.

Dr. Rhein recommended the use of Chloride of Methyl for the cure of neurotic affections. Relief is produced by the sudden intense cold produced by the Chloride of Methyl. It produces a temperature of—40° C. It is possible that the entire practice of the treatment of neuralgia might be changed.

Dr. Marshall believes that evulsion is preferable to resection or excision.

[TO BE CONTINUED.]

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.,

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LOUIS OTTOFY, D. D. S.
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"A ROSE BY ANY OTHER NAME WOULD SMELL AS SWEET."

Elsewhere we publish a letter from Dr. W. W. Allport, which primarily speaks of an editorial in this journal for September (see page 580), and secondarily is a proposal to hold a "memorial" meeting in 1892 of the American Dental Association. The author of the letter is a warrior of many years' standing in the profession, and one who has stood up for the dental section in the American Medical Association, and the dental section of the International Medical Congress of 1887. All of his energies for the past few years have been devoted to the attainment of closer relations of dentists with medical societies and medical organizations. He has been a faithful follower of the American Medical Association since 1881, and nearly all of his written papers have been read before the dental section of that association since that date. It was largely through his efforts that membership in the American Medical Association was made possible for dentists holding the D. D. S. or D. M. D. degree.

Dr. Allport was one of the founders and first officers of the American Dental Association, in which he has kept up a continuous membership. For several years he has not missed a meeting, and he thinks that the proposed "memorial" meeting will add the sinews of war to the coffers of the society, and increase the interest in the association by adding largely to its membership. We have been for nearly twenty years identified with the American Dental Association, and have seen its days of prosperity and days of inactivity, and from watching of the workings of the association during this time we think we have discovered one, or possibly two, of the causes of the decline of interest in its sessions. First and foremost is the evident tendency of the members of the dental section of the American Medical Association to control the American Dental Association and direct its policy. This tendency has been growing more steadily since 1883 or 1884 than in all the previous years of the existence of the association. The efforts spent in this direction, if they had been directed to the more profitable channels of preparing papers and presentation of scientific work in the meetings of the association, would not now call for a "memorial" meeting of the association in 1892.

The British Dental Association, which is a truly representative body, does not through any of its members try to become a part or parcel of the British Medical Association, but the British dentist devotes all his energies to sustaining his national representative body regardless of medical recognition, which is probably dearer to him than it is to an American dentist in the United States. The American dentist at the present time, has become afflicted with a disease that we shall call M. D.-ism. Anything that has a suggestion of M. D. about it is only fit for his delicate palate. This disease has been growing and spreading over this country until in Philadelphia, portions of New York, New Jersey, Georgia, a limited region adjacent to Chicago, and in Chicago it is epidemic. No deaths have been reported so far—indeed it seems to be the elixir of life for the aged, and as soon as the middle-aged and juniors acquire it every one rushes for the nearest medical society to secure membership. This is one craze that will subside after a time, and dental societies will flourish with their old time vigor. By the time 1892 rolls around a "memorial" meeting of the American Dental Association will not be needed, for in its stead a SECOND INTERNATIONAL DENTAL CONGRESS will assemble in the United States, and the American Dental Association, and every other dental society will, we hope, unite in calling for the largest gathering of dentists the world has ever seen, to discuss questions that will interest all classes of dentists, whether they hold M. D., D. D. S., L. D. S., M. D. S., D. M. D., or any other title than dentist. What is most needed to rejuvenate the American Dental Association is attendance on its meetings by dentists who practice dentistry, who are not ashamed to be called dentists, and who are devoted to and proud of their profession, who believe in its future and are willing to sustain local societies for mutual improvement and are not continually prating about their being specialists in medicine.

A dentist all over, from top of crown to tip of toe is what we admire as a dentist, and a doctor of medicine who practices medicine because he is a physician and is proud of the fact, is the kind of a doctor who excites our admiration ; he has our support and confidence, we mutually respect each the other and can live with him socially, fraternally and professionally.

How Does Arsenic Produce Death of the Pulp.

The above question was discussed at the October meeting of the Chicago Dental Society. Several of the gentlemen present expressed the opinion that the irritant effect of the arsenic was the exciting cause of death of the pulp, and one of the speakers (Dr. Baldwin) stated that he had been unable to detect a trace of arsenic in sections of the pulp. Dr. Ely said that the old time practice of using arsenic for the obtunding of sensitive dentine would seem to him a sufficient proof that the arsenic was absorbed, because application made to dentine, some distance from the pulp, frequently destroyed its vitality. Dr. Ely regards the pulp as being exposed when the enamel has been removed, and Dr. Baldwin remarked, if this were so, that the irritation of the filaments from the odontoblasts was still the prime cause of the ultimate death of the pulp. We confess that irritation alone does not seem to be sufficiently potent to destroy the pulp, when we take into consideration the quantity used, about $^1/_{60}$ gr. In looking over the experiments of Arkövy, Buckingham, Bödecker and Taggart, we fail to find that these experimenters consider irritation the sole cause of death of this organ. We leave the question with our readers to determine. If any one has a new theory to offer, our columns are open for a discussion of this subject.

The Banquet at Paris.

On Friday evening, the 6th of September, the resident dentists of Paris tendered a closing banquet to the members of the First International Dental Congress. This banquet was given at the "Mardelay," 100 Rue de Richelieu, in the "Salle Boulanger."

About two hundred gentlemen sat down to a most sumptuous feast. Professor Gariel, the representative of the Minister of Commerce and Industry, presided. Speeches were made in French, Italian, Portuguese, Spanish, Greek, German, Syrian, English and one or two other languages. The utmost good feeling prevailed.

The Secretary of the Congress, M. Pourchet, made a very happy speech when he was called upon, by presenting to every one at the tables a medal struck for the occasion, the face of which bore the following inscriptions:

Republique Francaise, Exposition Universelle, Congrès Dentaire International de Paris, 1889; on the obverse side: Sociètè Odontologique de France, Sociètè Odontologique de Paris. This medal will be highly prized by those present as a souvenir of the First International Dental Congress.

DOMESTIC CORRESPONDENCE.

Letter from Dr. W. W. Allport, Suggesting a "Memorial" Meeting of the American Dental Association for 1892!

To the Editor of the Dental Review:

Dear Sir—I notice your editorial remarks in the September number of The Dental Review, relative to the lack of interest in the American Dental Association manifested by the comparatively small attendance at its recent meeting, and the inactivity of the officers of the Sections. The Review mentions some of the reasons given for this state of affairs, stating among other things, that it was said that the "Association had had its day," and "that other societies would take its place," etc., etc.

I quite agree with you, that "the Association has done much good in the past, and that the united, active interest of all its members will make it the source of unmeasured benefit to the profession of the future."

Much as it is to be regretted, however, there is no disputing the fact that there is considerable foundation for the statement made in your editorial. As to the causes for it, there is room for a difference of opinion, and also as to what should, or can be done to change the apparent retrograde metamorphosis into a condition of rejuvenescence. Old age cannot yet be upon the organization, nor is there good reason to believe that it is yet *in articulo mortis*. It was founded in accordance with the principles of our republican institutions, and it has for over a quarter of a century been the representative and leading body of Dentists in the United States, and it still retains a strong hold upon its individual members, and on the societies which have for so long a period sent the delegates of which it is composed, as well as upon the profession in general in this country. The work that this society can do is greatly needed, and interest in it should, on no account, be allowed to lapse.

What seems to be called for is some tonic, or stimulant, to break up monotony, and restore the interest now apparently lacking; a sort of an elixir of life-injection, or a Sheridan dash, to infuse new life and activity into its members, as well as into the ranks of the profession in general, that they may take hold and aid in the work that should be done.

It is now a settled fact that there will be held a Great World's Exposition in this country in 1892, at which, no doubt, large numbers will be present from all civilized nations. That many European dentists will visit our country at that time is highly probable. Let me suggest, therefore, that the American Dental Association make 1892 the time, and the Exposition the occasion, not only of extending a friendly invitation to the dentists of the world to be present at a memorial meeting of the Association, but also of securing for itself a necessary stimulus, as well as a filling up of its ranks, and thus obtain a new lease of life and an increased usefulness.

Local societies, for instance the New York Odontological, and the First District Dental Society of New York, the Chicago Dental Society, and others as well, have had their anniversary occasions, to which they have extended invitations to the prominent members of the profession in this country, and those occasions have been fraught with pleasure and profit to all concerned. The visitors have been well paid for their time and expense, and the local societies have felt the beneficial effects of communion with others from near and far. Let these examples, which have been demonstrated to be useful, be followed and enlarged upon by our National Association, by inviting all respectable members of our profession to meet with us on that occasion.

In so far as the "American" overshadows any local name, so this occasion would be made to overshadow any local occasion.

In regard to membership, by resolution, it might be provided that at this special meeting all reputable *American* practitioners (not delegates or permanent members) might be admitted on payment of a single years' dues; while all foreign dentists might be made the guests of the society, and, as such, would not be allowed to pay dues. Should some such arrangement be carried out, and prominent home and foreign dentists be invited to contribute papers, and to take part in the discussions, there is no doubt that at least one thousand American dentists would be in attendance, and that the Association would be honored with the presence of a large number of foreign guests. By the united action of the profession in this country, which, by a little concession on the part of a few, might be secured the grandest and most instructive meeting of dentists that the world has ever known would be held.

Besides this, at least $5,000 could be added to our treasury to aid in original investigation, relief of personal needs, to prevent extortion, or in any other way that the Association might deem for the best interest of the profession. Yours truly,

CHICAGO, September 30, 1889. W. W. ALLPORT.

FOREIGN CORRESPONDENCE.

INTERNATIONAL DENTAL CONGRESS.

To the Editor of the Dental Review:

MY DEAR SIR:—The first International Dental Congress was opened in Paris, at the Palais of the Trocadero, on Monday morning, September 2, under the presidency of Prof. Gariel, of the Paris Faculty of Medicine, who represented the French Government. The meetings were held for five consecutive days, and one can truly say that not one hour was left unoccupied.

The Congress has been a perfect success in every respect, and every one who has been fortunate enough to attend all of its meetings, will agree with me that it was a success, much beyond our best expectations. The officers and members of the Organizing Committee deserve to be most heartily congratulated for the way in which this Congress was organized, and not less so for the great success which was the consequence of such a careful, efficient and perfect organization.

Such a task as the preparatory work necessary for the holding of the first exclusively Dental International Congress, was by no means an easy one, for notwithstanding the strictest care, the utmost attention on the part of the organizers, defects must occur and become apparent during the holding of the session, but how microscopical these slight errors looked when compared with the magnificent success obtained.

It is so very easy to criticise a certain fact when it already belongs to the past and has no chance to be done over again; it is so convenient from a lucrative point of view, of course, to find fault with the treatment which a brother practitioner has advised for a certain patient who died when nobody under the sun could have done anything for him. It is so easy to say "had I been in his place, I would have done otherwise." Probably such persons would have done differently, but a thousand times worse. At this Congress we have not had the advantage (?) of observing the features of those carnivora of the battle-fields; they might have been present, but they have wisely kept in the dark and accepted by force of circumstances what they probably would have liked to annihilate, to tear or crush to pieces.

Once more to the president and officers of the Congress, to M. M. Gaillard, Poinsot, Saussine, Blocman, Pourchet, Godon, Kuhn, Marchandé, Dubois, Chauvin, etc., all who were present extend, I am sure, the expression of their sincerest gratitude for the profitable and interesting moments passed in Paris during this Congress.

At the first meeting nearly 500 persons were present. Prof. Gariel, acting in the name of the French Government, delivered the address of welcome to all the foreign and provincial members present. Each one of the civilized countries was represented, and I am happy to say that the United States did not remain behind, counting amongst its representatives some of the leaders of American dentistry. We particularly noticed Dr. E. A. Bogue, New York; Dr. Thomas W. Evans, Paris; Drs. A. W. Harlan, Swasey, Wassall, Ward, Chicago; Dr. Bonwill, Philadelphia; Drs. Jarvie, Jr., Parr, Parmly Brown, Campbell, New York; Dr. Newby, Dr. Patten, St. Louis; Drs. Daboll, Davenport, Du Bouchet, Levett, Michaëls, Millard, Spaulding, Williams, Paris, etc. Amongst the other foreign delegates we noticed Prof. Cunningham, Drs. Baldwin, Lawrence, etc., Great Britain; Prof. Redard, Switzerland; Drs. Richter and Telschow, Germany; Dr. Michaëls, Russia; Dr.

Campani, Italy; Dr. Rothman, Austria; Drs. Fay, Delapierre, Rosenthal, Belgium; Dr. Etchepareborda, Argentine Republic; Dr. Oscar Amoedo, Havana; Prof. Benson, Sweden; Prof. Haderup, Denmark; Mr. Heide, Sweden, etc., and over 400 French practitioners.

After Prof. Gariel's opening address each one of the official delegates replied in the name of his respective country, to the words of welcome, and all were received without exception with the most enthusiastic cheers; which denoted and showed on the part of all present a desire to work in union for the rise and welfare of our profession.

Drs. David and Gaillard next spoke, and the Congress then adjourned to meet again the same afternoon.

The afternoon sessions were exclusively devoted to the scientific communications, the reading of papers, etc., and lasted for five consecutive days, beginning at 3 p. m. and ending at 7 p. m.

The different papers were classified in four sections: 1.—Dental Anatomy and Physiology; normal and pathological. 2.—Operative Dentistry, Special Materia Medica and Therapeutics. 3.—Prosthetic and Orthopedic Dentistry: 4.—Dental Deontology and Hygiene. Each section occupied a different afternoon, the one on Operative Dentistry necessitating two.

The number of communications was very large, yet almost all indicated and showed a tendency to scientific investigation to accurate observations in many important branches of our specialty which deserves to be the most particularly encouraged.

On the other hand, one or two papers were received with such unanimous protestation on the part of all present that hardly any explanatory remarks seem necessary. In one case the author, after having explained and described a method and material of his own for constructing artificial dentures, in two words concluded: "That all dentists who used rubber for prosthetic purposes were dentists of a low grade, who were continuously poisoning their patients." The enthusiasim (?) with which his paper was received decided the author to withdraw it and prevent it from appearing in the transactions. This decision on his part was accepted by all the members of the Congress amidst general applause.

The president of the Congress, Dr. Gaillard, and the two vice-presidents, M. M. Poinsot and Saussine, who directed the scientific meetings of the Congress, fulfilled their duty in a most praiseworthy manner. By their rapid decisions and energy in dealing with a few little incidents which occurred during the meetings, they easily mastered the situation, and brought the facts back to their true and real proportions. By directing the discussion in a firm yet moderate manner, they easily restored the equilibrium and harmony which are always more or less disturbed, when several persons who disagree on a certain subject are brought in contact with each other, and they prevented the loss of much of our valuable time, which might have been taken up by long, useless and sterile discussion.

The practical demonstrations in both operative and mechanical dentistry, the presentation of new instruments, were reserved for the morning hours, between 8 a. m. and 12. The operative skill displayed the manipulative dexterity shown by the clinicians, as well as the ingenious character of the different methods and instruments prescribed were by no means the least interesting part of the Congress. Clinical demonstrations were given by Drs. Aubeau, Bleichsteiner, Bonwill, Bryan, Bing, Campbell, Caratzanis, Chauvin, Darin, Dubois, Gaillard, Gartrell, Godon, Levett, Michaëls, Parr, Poinsot, Rauhe, Rothmann, Telschow, etc., etc.

In regard to practical demonstrations, I must not forget to mention the most interesting office of Dr. Kuhn, who kindly invited all the members of the Congress to visit his splendid, probably unique, installation. This gentleman has mounted his office in accordance with all the recent discoveries made, both in the use of pneumatic force or compressed air and electricity. He has an engine running by pneumatic force, and giving all the desired movements, backward or forward, rotation, immediate stoppage of the rotation, etc. He has also a collection of electric cauteries, mallet, mouth-lamp, hot-air syringe, etc., which are all beautifully constructed, and work with astonishing perfection.

If the scientific part of the Congress has proven to be a success, not less can be said of the social entertainments given.

On the first evening a reception was given by the President and Professors of the Dental School of France, in the building of that college, where the scientific meetings were held.

On the third day another evening reception was extended to the members of the Congress by the President and Professors of the Dental School of Paris, at which place were given each morning the practical demonstrations.

At both these social entertainments the greatest cordiality was seen to reign between the members present, who all appeared delighted at the elegant way in which the reception rooms had been organized and prepared for them.

On the fourth a very pleasant and enjoyable evening entertainment was given by Dr. Michaëls from Paris.

Finally, the Congress was closed by a banquet which united all the members of the Congress, and which will remain to all of us as one of the most pleasant recollections of this international fraternal meeting. A great number of speeches were delivered in many different languages; English, German, Russian, Italian, Spanish, French, and even in Syrian. This last speech was a very short one, but well exemplifies the idealistic nature of the Oriental. The speaker said:

"One day, while I was thinking of how I could acquire additional knowledge in my profession, suddenly a bright sun appeared on the horizon, I followed it and it took me to the meeting of the First International Dental Congress in Paris."

At the last business meeting of the Congress, the question was brought up, when and where the next International Dental Congress was to take place?

The question remained undecided, and was left to the *Dental Section of the International Medical Congress, which meets next year in Berlin, to indicate whether another purely Dental Congress is ever to meet again, or whether we are to satisfy ourselves with the triennial meetings of the Medical Congress.

The establishing of a Dental Section in the International Medical Congress, is no more than a just action on the part of the medical profession. It is beyond question, that dentistry is a specialty of medicine. Dentistry or odontology, as one might wish to call it, has belonged, to within a comparatively short time, to the general subject of surgery; it has been practiced by all the great surgeons of past centuries. Ambrose Paré, as well as John Hunter and others, have all contributed to the subject of dental science, as they have to the other specialties. In those days, however, one could readily be a universal surgeon, one could easily take in the whole field of medical and surgical knowlege, and even be acquainted with all the medical works known in the world. But can you find a surgeon who to-day could claim to know all, or even the best medical and surgical part of literature, who can practice a specialty with as much skill as a specialist? No!

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* Executive Committee of the Dental Congress.—ED.

As years gradually advance, and as knowledge consequently increases in extent and minutiæ, the general practitioner has a tendency himself to specialize, he becomes an ophthalmologist, an otologist, a laryngologist, a gynæcologist, a dermatologist, an odontologist, does this mean that he ceases to belong to the medical profession? By no means! Well, then, is it not just, is it not absolute fairness that odontology should have its section in the general medical meeting?

So far for this matter, now, does our connection with this General Medical Congress oblige us to be chained down, and must it interfere altogether with our independence? Have we not as much right to unite ourselves by exclusively special international meetings, as other specialties do, without really separating from the general congress? I think we have!

Let us not forget that we must know how to be just with ourselves if we want to be free!

It is especially in separate meetings, when we feel that we are absolutely at home, that we are entirely independent, that we have to rely on ourselves alone; then we come into closer professional relationship, a closer bond of union is thrown between the cosmopolitan members of our profession, the political divisions which separate our different countries are leveled and smoothed, and the only flag that floats over our heads has the same colors for us all throughout the civilized world, it is the flag of the Art and Science of Dentistry!

Before closing let me express the sincere hope that the Dental Section of the International Medical Congress which meets in Berlin next year, may prove to be as great a success as their special meeting has been, and also that the same success may attend the Second International Dental Congress, which we hope to see held in New York, Chicago, or some other American city in the year 1892.

Most faithfully yours, ARTHUR C. HUGENSCHMIDT, M. D., D. D. S.

15 Rue de la Paix, Paris, Sept. 20, 1889.

INTERNATIONAL DENTAL CONGRESS.

To the Editor of the Dental Review:

DEAR SIR—Much has been written on the subject of holding an International Dental Congress. The project meets with approval and opposition.

The opposition, while at first against the idea *quand meme* of establishing an International Dental Congress, admits the Paris Congress to be a *fait accompli*, but is strongly against the perpetuation of this International meeting.

Allow me, Mr. Editor, to make a few remarks on this topic: I cannot persuade myself to the belief that an International Dental Congress, which meets periodically, say every two or three years, will in any way be antagonistic or detrimental to the Dental Section of the International Medical Congress.

It has been urged in this journal, and we believe with reason, that in the section for Ophthalmology no interference has been observed through the congresses which are held in Heidelberg.

Congresses for Hygiene are annually taking place, yet a section is reserved for this branch of medicine in the International Medical Congress.

But another question arises which it would be well to take into careful consideration by all who are opposed to an International Dental Congress, viz.: that it is almost impossible to form a dental section in the International Medical Congress when it meets in a small country where no dental college or a dental society of any importance exists. When the 6th and 8th International Medical Congresses were held respectively in Amsterdam and in Copenhagen no dental section was reserved.

We admit that when the Congress was held in Amsterdam, the request was for the first time made, that in the future a dental section should be added to the Congress, but at the same time it must be frankly confessed that it would have been impossible to have organized, in this city, a dental section with any hope of success.

If I am not mistaken, it was for the same reason—there not being sufficient collaboration among the dentists of Denmark—that the dental section was suppressed.

I believe that International Dental and Dental Sections of the International Medical Congress can only be held in large countries; the choice therefore will, relatively speaking, be limited.

This is not the case with the selection of the place of meeting of the International Medical Congresses. They are and can be held in large and small countries, as the record shows.

For this reason I cannot consider the objections valid, that in forming an International Dental Congress, independent from the Medical, would be severing us from the last named, and be prejudicial to the Dental Section of the International Medical Congress.

Yours truly,

Amsterdam, Holland. J. E. Grevers, D. D. S.

PRACTICAL NOTES.

A New Root Trimmer.

The accompanying cut (Fig. 1) illustrates a root trimmer invented by Dr. B. J. Bing, of Paris, France. It was exhibited at the meeting of the First International Dental Congress in Paris. As will be seen, the instrument consists of two handles, which operate one beak, or knife, and a bur; the latter can be lengthened or shortened by a set screw. With the set screw the bur is turned into the root canal as far up as may be desirable to secure a good fulcrum; the sharp beak is then applied to the margin of the root, as shown in Fig 2. By turning the handles of the instrument, and by compressing them at the same time, the root can be trimmed without changing its natural contour, except at

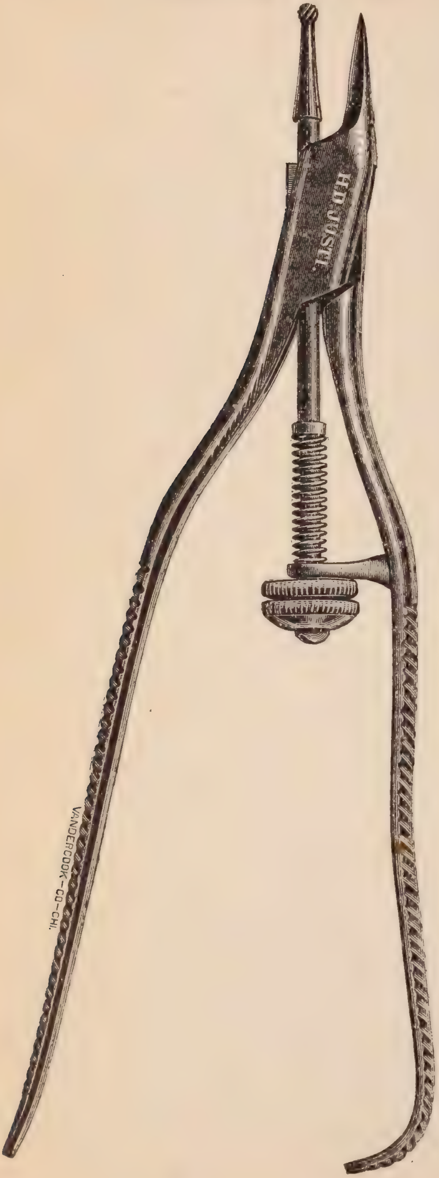

Fig. 1.

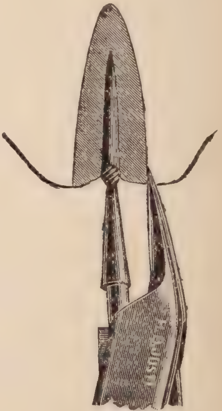

Fig. 2.

the will of the operator. It is not necessary to trim the entire circumference of the root, unless necessary. The operator, with this instrument, can trim the root just at the point desired, and may bevel the edge in any desired degree. This is one of the best instruments of the kind that we have ever seen. It attracted a good deal of attention among the delegates to the International Dental Congress, and should be in the possession of all who practice crown or bridge-work.

SURGICAL AND PROSTHETIC DENTISTRY—OUGHT THEY TO BE SEPARATED IN PRACTICE?

BY NEMO.

In the report of the annual meeting of the Eastern Counties' Branch of the British Dental Association in June last, the address of the president contains the following: "We have heard something lately about separating the mechanical part of our profession from the surgical. Such a divorce could never, I believe, be effected, nor would a change in that direction be useful to us; for it appears to me there is a mischievous tendency among many to neglect the mechanical side of our calling, thus causing injury alike to dentist and patient. I would go so far as to say that he is the best dentist who is the best able to sit down at his workbench and turn out good work."

This is a very strong declaration by a man holding a high position in the profession, and whose address contains much that is worthy of the attention of every dentist.

The question of separating the prosthetic from the surgical work of the dentist has, within a few years excited a good deal of discussion, but so far I have been unable to see any sufficient reason why every dental operation should not be performed in one office and under the direction of the proprietor.

It is neither convenient nor agreeable for the dentist to leave the operating chair to handle vulcanizers, flasks, etc., but to take the impression and select the teeth suitable for the case and in fact supervise the whole work, would not appear to be inconsistent with his other duties, and would no doubt have a tendency to secure to patients better results than if the whole matter of supplying artificial teeth was made a separate business. The education now required to enable one to practice, or to obtain the degree of Dental Surgeon develops the general intelligence as well as the mere technical ability, and as the standards are made higher, so much more will the requirements approach what is called a liberal education, and with this will be developed a greater ability for all work.

If there is to be a separation, and the dentist who inserts artificial teeth is to have nothing to do with the surgical part, he will probably object to being required to spend three or four years, or the largest part of it, acquiring knowledge for which he will have very little use.

It appears to be the mistaken estimate of the real importance of prosthetic dentistry that leads to the idea conveyed by the phrase "mechanical dentistry." A true appreciation of the work would properly give it the title of "Artistic Dentistry." Filling teeth with gold or other material is a mere purely mechanical operation, involving no more artistic ability than is required to give a smooth finish to the work, while in supplying artificial substitutes for the teeth the operator needs to have a large share of that ability to enable him to produce results that so harmonize with the other features that it shall seem to be a part of nature's work.

I cannot agree with the passage quoted from Mr. Hall's address, that "he is the best dentist who is best able to sit down at his workbench and turn out good work."

That would be reversing the proper order of importance in dental operations. The best dentist is the one who is best prepared by theory and practice to treat all cases whether surgical or prosthetic, but it is surely of first importance to save the natural teeth.

But I do believe that all departments of dentistry are so connected, and so inter-dependent upon each other, that the best results for all will be found in their continuing as one profession.

This, however, does not infer that the dentist must himself make the cast, handle the vulcanizer or blow-pipe. He should know how to do all things, and to do them in the best manner, in order that when he employs others he may properly superintend their work; and in employing others to do the more mechanical labor he does not degrade his profession any more than the artist does who employs another to grind his colors or dig the marble from the quarry.

One other point to which the address referred is worthy of notice, "the need of more practical work in Society meetings," and he might have added in dental literature.

The learned essays frequently heard in the convention and read in their reports are often the proof of great industry and careful research, but to the greater number of dentists are of less interest than examples of practical work in either the surgical or prosthetic line.

Every dentist will have peculiar cases, presenting new difficulties to overcome, and brief descriptions of such cases, and his methods of treating them, and his success or failure would be a valuable aid to others ; and here let me say emphatically that the account of failure may be very valuable as a warning to others, and to induce communications of better methods. Nor should these items of practice be withheld from any feeling that they are not important because occurring in the practice of some one little known in the profession. The intelligent dentist who has a small practice and much leisure has more time to devote to the work suggested than he whose time is fully occupied with operating, and the habit of putting his thought on paper will induce careful thinking, and so largely benefit himself as well as his readers.

REVIEWS AND ABSTRACTS.

Transactions of the Indiana State Dental Association. Thirty-first Annual Meeting, held at Indianapolis, Ind., Tuesday, June 25, 1889, continuing three days. Published for the association by Mrs. W. M. Herriott, Indianapolis, 1889.

It is highly commendable that the transactions of the Indiana State Dental Association, are as a rule, published promptly, the present volume having appeared within three months of the time of the meeting. We would suggest to the publication committee to hereafter bind the annual volume. As a general rule, a paper-covered publication is treated as a magazine or periodical, and many times finds its final resting place on some dusty shelf or out of the way place, while a bound volume is usually accorded a position of more or less import among other books on the shelves of a library, and in this way is better preserved and the source of more usefulness than it otherwise would be. The cost of binding is only a trifle, but it would add materially to the permanent value of the transactions of this growing association.

The transactions of 1889 contain 93 pages, well printed and on good paper. By a more careful proof-reading many of the errors which appear might have been suppressed. The papers read before the association show the usual care in their preparation. The discussion, in many instances, is interesting and instructive, but much that has been printed could have been omitted by the publication committee. The list of membership contains the names of 119 active and 45 honorary members. The Code of Ethics of the association and the amended dental law of Indiana is also published.

BOOKS RECEIVED.

ORTHODONTIA, BY S. H. GUILFORD, A. M., D. D. S., PH. D., PHILADELPHIA, SPANGLER & DAVIS. The S. S. White Dental Manufacturing Company, sole agent. Price $1.75, cloth. Pages, 186.

PAMPHLETS RECEIVED.

ADDRESS OF PRESIDENT C. W. EARLE, ILLINOIS STATE MEDICAL SOCIETY, 1889.

ANTISEPTIC OBSTETRICS, by Chas. Warrington Earle, M. D.

OBSERVATIONS IN VIENNA. THE GENERAL HOSPITAL, BILLROTH, CARL BRAUN, BANDL AND OTHERS, by Prof. C. W. Earle.

THE INFLUENCE OF SEWERAGE AND WATER POLLUTION ON THE PREVALENCE AND SEVERITY OF DIPHTHERIA, by Charles Warrington Earle, M. D.

MUSCULAR DEBILITY, by James I. Fellows, 56 Holborn Viaduct, London, England.

MEMORANDA.

Dr. Geo. M. Cameron has retired from practice.

Dr. Geo. J. Dennis, of St. Louis, has located in Chicago.

The Chicago Medical Journal and Examiner has suspended publication.

The Northern Illinois Dental Society will meet in Sterling, October 16 and 17.

It doesn't seem inappropriate that Tuscaloosa should have a dental college.—*Ex.*

Dr. T. W. Prichett, the president of the Illinois State Dental Society, visited Chicago in October.

Dr. L. J. Mitchell sailed October 8, for London, England, to become associated with Dr. St. George Elliott.

The Western Illinois Dental Society will convene at Bushnell, October 22 and 23. An excellent programme has been prepared.

One of the latest antiseptic remedies for the disinfection of root canals is the Mettamidomethlathylmethylbenzyldiamidophenylcarbinol.

We take pleasure in announcing that Dr. Isaac B. Davenport, of Paris, France, has removed from Boulevard Haussmann to 30 Avenue de l'Opera.

The following persons were duly licensed to practice dentistry at the meeting of the State Board of Dental Examiners at Springfield, Sept. 17, 1889: H. O. Browning, Girard; J. L. Ubellar, Geo. L. Bennett, F. J. Shea, E. G. Hetu, E. H. Bulson, Chicago.

INTERNATIONAL MEDICAL CONGRESS.—A further announcement concerning the Congress has been made. Membership is limited to physicians and surgeons in regular standing. The registration fee is twenty marks, and each member will receive a copy of the transactions.—*The Medical Record.*

It is a good plan to have the patient cleanse the teeth and gums with soap and water just before taking an impression for a partial denture. The oil in the soap prevents the plaster from sticking to the teeth, and while there is not sufficient oil to mar the impression, the latter is smooth and yet a perfect reproduction of the teeth and gums.

While THE DENTAL REVIEW is majestically moving onward in its Western glory, at peace with all the world, it pains us to see our brethren of the Quaker City on the war-path, reaching each for the other's scalp, saying naughty things about each other and acting bad on general principles all around. Fie! brothers; remember the injunction: "dwell ye in peace on earth."

Mrs. George H. Dunsford, the wife of a leading citizen of Reading, Pa., died September 13, after being thrown into spasms while laughing heartily at a theatrical performance which she recently attended. Her artificial teeth were missing, and a post-mortem examination this evening developed the fact that she had swallowed them. They were found lodged in her stomach.

The following circular has been recently circulated among dentists:

"CHICAGO CLASS.—Pharmacists, dentists, etc., prepared for graduation in Medicine, Pharmacy, etc., doing nine-tenths of the study at home under qualified preceptorship. Cost insignificant, including texts. Medical graduation facilitated in full conformity with the laws of the various States. Write for prospectus. Please show this to your friends."

Dr. H. J. McKellops has just secured at considerable expense an old dental work entitled: Tooth medicine for all kinds of defects and diseases of the teeth, many wholesome and approved medicines extracted from the works of Galen, Avicenne, Mesne, Cornelii, Celsi, Plinii, etc., together with short and useful instructions how to preserve healthy teeth and to extract decayed and hollow teeth as well as their roots without injury or pain. Printed at Meyntz by Peter Fordan, August, MDXXXII. Vignette and woodcuts. 4to; vellum. In German.

DENTISTS AND DIPLOMAS—DECISION OF A NEBRASKA JURY IN AN INTERESTING CASE.—Five months ago Dr. G. W. Swartz, a dentist in Nebraska City, Neb., was arrested and fined $50 under the law requiring dentists to have a diploma, showing them to be graduates of a dental college. Swartz had no such diploma, but had one from a medical college, showing him to be a regular graduate. He appealed to the district court and the case occupied nearly a whole day. The jury, after an all night's session, returned a verdict of not guilty, holding that if physicians were allowed to extract teeth, Swartz's diploma allowed him to do so. The case is the first in the State under the law, and it excited much interest among physicians and dentists.

The Sixth Annual Meeting of the Ohio State Dental Society (re-organized) will be held in Cleveland, October 29, 30 and 31, at the Hollenden Hotel, corner Superior and Bond streets. Sessions commence at 10 o'clock, A.M., October 29. The following is the programme: 1. Address by President—Dr. C. M. Wright, Cincinnati. 2. Dental Education—Dr. J. Taft, Cincinnati. 3. "Failures"—Dr. C. R. Butler, Cleveland. 4. Legal Liability of Corporations for Injuries, the Result of Negligence—Dr. H. A. Smith, Cincinnati. 5. Excelsior—Dr. H. H. Harrison, Wheeling, W. Va. 6. Amblyopia—Dr. D. R. Jennings, Cleveland. 7. One Way of Increasing Dentists' Usefulness—Dr. H. M. Kempton, Cincinnati. 8. Woman's Work in the Profession—Dr. Martha J. Robinson, Cleveland. 9. Dr. E. G. Betty will read a Report as President of the Seventh District Dental Society. 10. Voluntary Papers. *Clinics:* Method of Setting Dewey Crown—Dr. S. B. Dewey, Cleveland. Voluntary Clinics.

The International Dental Congress—the first meeting of the kind ever held—was opened at the Trocadero last Monday morning, under the presidency of Prof. Gariel, of the Paris Faculty of Medicine, as representative of M. Tirard, president of the Council and Minister of Commerce. There were no less than 500 members present, comprising most of the prominent dental authorities of every nationality, of whom we need only name Dr. Thomas W. Evans, Drs. Bonwill, Bogue, Harlan, Swasey, Daboll, Jarvie, Davenport, Wassall, Parr, Michaels, Hugenschmidt, and Du Bouchet, representing the American dental profession of Paris; Drs. Cuuningham, Baldwin and Williams, from Great Britain; Drs. Fay and Delapierre, from Belgium; Prof. Redard, from Switzerland; Drs. Haderop and Heide, from Sweden and Norway; Drs. Telschow, Claas and Richter, from Germany; Drs. Rothmann and Frank, from Austria, etc. The sessions of the Congress continued throughout the week, Dr. Gaillard, of Paris, being the chairman. Numerous festive occasions united the members socially, and the professionally important and personally enjoyable Congress brought its meetings to an end yesterday afternoon, and closed with a banquet in the evening.—*American Register.*

Anent the proposal for holding a Second International Dental Congress, the *Zahntechnische Reform* says: American dentists who have been able to educate themselves independently and without hindrance, are not familiar with the dangers and injuries to which our profession becomes exposed when connected with medicine and medical standing. The desire to appear in the role of medical men, has overshadowed the better judgment and culminated in the recognition at Washington.

If the American dentists would consider the reason why their profession in the United States has been several decades in advance of the position of the profession in every European country, they would consider their tolerated admission to the meetings of medical men, a dangerous way leading from the right path, not an advance. * * * It is a mistaken undertaking of American dentists to permit themselves to be taken into tow by medical men, and their mistake is based on an erroneous conception of the position of the professions. We are of the opinion that International Dental Congresses will be a blessing, while our participation in Medical Congresses is an immeasurable hindrance to the advancement of our profession, but we firmly believe that the knowledge of this truth by dentists will not detain most of them from attending International Medical Congresses, for in that case they might be looked upon as medical men.

LISTEN TO THE TALE OF WOE.

ANOTHER ACCOUNT.

'Twas on the classic Hudson,
  One lovely summer day,
Our happy "combination"
  Beguiled the hours gay.
In perfect peace and harmony
  Came song and anecdote,
Till some one chanced to mention
  A dryness in his throat;
And strangely epidemic
  That dryness seemed to spread
Till each one of the circle
  "Spit cotton wool," he said.
Uprose one of our number,
  A Brooklyn man was he,
The portly, sturdy Atkinson,
  The soul of jollity;
Our eager eyes we fixed on him
  In six impressive winks,
"Rest easy, boys," he stoutly said,
  I go to bring the drinks.
O, then a "happy family,"
  We watched for his return,
And when we saw him with the flask,
  Each longed to have his turn;
But Lewis, entertaining chap,
  He surely should come first,
So all stood back to give the wit
  A chance to quench his thirst;
He took a gulp—it must be strong
  To down the Buffalo!
And those who knew him best were shocked
  To see him sputter so,
He crimsoned high and coughed and choked,
  Then said, "its not too strong
But somehow just a drop or two
  Got swallowed kind o' wrong."
Then, genially he passed the flask,
  No stingy fellow he,
He wanted each to have a chance
  To share his jollity.
Gray stood the next,—(no plan of his,
  He's artless as a child)
Drank, smacked his lips, and, musing, said
  The liquor is too mild.
The fat and jolly Doherty
  Next seized upon the treat.
He glowered upon Atkinson,
  "This whiskey is too sweet!"
Then uprose Philadelphia,
  "Look here, boys, what's the row?
It's queer you can't enjoy a smile,
  Just watch your uncle now."
Off-hand he tipped the bottle up,
  Oh, then there was a sight!
The "combination" scattered as he
  Let out left and right.
That unregen'rate Brooklynite

Had false been to his trust,
No wonder pop and sea-water
Had got him roundly cussed.
But Kansas City smiled a smile,
And below went for a Grip,
He knew where there was comfort for
The stomach and the lip.
All eyes beheld him eagerly
As he produced "Martelle,"
And boxes three of fragrant weeds
Whose marks the story tell.
Alas for Kansay City! E'en
A cow-boy has no chance,
When Gideon and his lawless band
Upon the prey advance;
While innocent Chicago
Now whips a corkscrew out,
And the astringent mouth-wash
Quick circulates about.
And O, poor Kansas City,
He pulls his slouch hat down,
And wrinkles more his withered face
In a despairing frown.
Full well he knows the fairness
For which he may prepare,
And hopes that of all those cigars
One may become his share.
O for some sturdy weapon,
To meet the hazel nuts
That fly about like pelting hail
When keen the north wind cuts!

Ah, in these ides of Autumn,
We reminiscent muse,
Upon the "combination,"
That Atkinson accuse.
How, on the classic Hudson,
Without a conscience-twinge;
The trust of all hearts he betrayed
And woke them to revenge.
Not all of Lewis' music
Could soothe his savage breast,
And just as he had suffered,
He tortured all the rest.
A scene of reckless rapine
Became the quiet deck,
And Pierson tearfully beheld
The goods become a wreck.
The bullets there were flying—
Can Brooklyn now recall
Without a penitential pang
That he's to blame for all?

Yes, in these ides of Autumn,
We still can taste it, rank,
That vilest combination
The "combination" drank!

. . . Monopoly . . .

Several Dental Journals have lately enlightened their readers on this subject and we have read with much interest the ideas advanced, but the cry of monopoly is used to cover altogether too much ground. The word has a proper and legitimate application, and when carried beyond this only confuses the ideas and makes any clear and distinct consideration of the subject impossible.

In the large speculative transactions of dealers in articles of food and certain classes of raw materials such as iron, copper, coal, etc., either one operator, or more usually a combination of operators, purchases and holds the material until by the scarcity outside of their holding the price can be forced up to a point which will pay them an immense profit.

Attempts to control prices, hinder sales or limit production for such a purpose would entitle the operators to be called monopolists in the offensive sense of the term, but there is another kind of monopoly that carries no wrong with it and may exist in the smallest transactions.

Your bootblack may invent a mixture which will put a fine luster upon your boots, and, keeping the secret of the compound to himself, establish a monopoly therein, or he may patent the article and for a consideration allow others to use it. In either case he is reaping the reward of the brain work he has put into it.

These two classes illustrate the different phases of monopoly. The first is condemned by the common conscience of mankind; the other is legitimate and proper. But there is another application of the term which seems to be entirely incorrect. There are, we will suppose, half a dozen persons making the same article; one of these manufacturers, by giving years of careful study and application to his work, has brought it to such excellence that it readily sells for twice as much as the crude product of the new beginners in the same manufacture, and because his goods have proved their worth, and are held at this price, some unreflecting persons call him a monopolist.

This most unreasonable and offensive application of the term needs but a moment's thought to prove its injustice.

Consider the article of artificial teeth. The variation in price is really very large, some selling for twice as much as others, but this could not be were they not really worth twice as much, and so estimated by the dentists. Faithful effort, intelligently directed, will not ultimately fail of its reward.

For instance, Mr. Justi has for about thirty years devoted all his time, talent and unremitting labor to produce the most perfect artificial teeth, regardless of cost, and has arrived, not at perfection, because no human work is perfect, but to that degree of excellence which has caused the Dental profession to concede their worth and willingly pay the price asked for them. A few unthinking persons there may be who will rank such service to the profession with the efforts of the man of yesterday and cry "monopolist," because the artist claims a moderate recompense for his life work. This difference in valuation is conceded in every art and every profession, and the dentist who has earned, through long years of patient effort, distinction for knowledge and skill, would think it rather hard if his remuneration were to be graded by that of those just beginning their work. Let us put aside this word Monopoly, as applied to men who are manufacturing goods to sell, and whose interest and desire it is to make and sell all they can, and apply it only to those who wish to prevent the sale and limit the production of goods until prices are forced up to a point far beyond what natural production and fair competition would permit.

VERITAS.

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ORIGINAL COMMUNICATIONS.

The Bacterium and its Pathological Significance.

By G. H. McCausey, Janesville, Wisconsin.

The observant dentist, who during the past few years has carefully watched the results of modern surgery, can but have noticed that so far as those results are concerned, great advances have been made. Previously, as the result of the operation of ovariotomy, death has been the rule. At the present time it is the exception. In the past, as now, a fracture of any portion of the osseous system unaccompanied by a break in the continuity of the integument, has generally been succeeded by rapid repair. Should the fracture be accompanied by breach of continuity, the succeeding history of the case has generally been marked by the presence of traumatic fever, suppuration of the soft parts involved, lack of deposit of granulation tissue, with a general lowering of the tone of the whole system; showing the existence and the presence of something serving to interfere with nature's effort in the direction of a return to health; and at times followed by septicæmia, resulting in death to the patient. In the not dim past, the obstetrician often found his efforts followed by puerperal fever, case after case following the other as he attends them, and so often, that he sometimes found it necessary to refuse to attend them, in order to avoid death to the patient, while rooms in which such cases occurred, were rightfully regarded with suspicion for years afterward.

The history of public hospitals has been a record of deaths from septicæmia, and its twin brother pyæmia, both vieing with hospital gangrene to produce each the greater number of victims.

Both epidemic and endemic diseases have left their record of death, suffering, and sorrow, unless the initial case has been completely isolated from the very first.

Periodically the Asiatic cholera begins its westward march, leaving in its wake, districts wholly or partially depopulated. Almost annually, the yellow fever leaves its home in the tropics, and pays a visit of death to the gulf states, if it does not penetrate to those more northerly in latitude. Grades of typhus, typhoid, and malarial fevers appear endemically, while the tear-wet cheek of the mother is a reminder of the death of her child from malignant diphtheria, which occasionally decimates the ranks of the little ones, especially in large cities possessing limited sanitary facilities.

Leprosy which is eliminating the native population of the Hawaiian Islands, is fast penetrating the United States ; especially on the Pacific Coast, while in our own State, epidemics of variola, measles, scarlet fever, and the various lesser diseases of contagion, follow in succession. For hundreds of years the medical world has remarked the fact, that contact of a healthier organism with one suffering with a certain disease of contagion, has been followed by an attack of the same specific disease ; which conveyed the idea of the existence of a specific, something as a cause, and which stimulated investigation in the direction of an effort to identify it in each specific disease.

The purpose of this paper is not to rehearse the theories and investigations of the past in reference to the subject, for that would fill volumes ; and is now a matter of medical history. It is necessary, however, to say that positive information regarding the subject has been acquired within the past few years only.

During all the years of study of the subject of infectious diseases, investigators have in a microscopical examination of the tissues, fluids, and dejecta of patients dying of these diseases, found invariably present certain small organisms of different shapes and sizes, and the nature of which, together with their significance, was imperfectly understood.

Some presented a spiral appearance, others that of minute rodlets, others that of minute filaments, others appeared as minute spherules. The spiral and rod-like form were often detected in rapid motion, from which circumstance was derived that idea that they were minute animals. They were distinguished as unicellular, and in structure apparently homogeneous throughout. It was found that while the spherical bodies differed in size, the rod-shaped and spiral ones differed as well. At the same time similar organisms were found on epithelial surfaces of the healthy subject ; notably the oral cavity, intestines, and air passages, all of which led to much doubt regarding their significance and little progress was made toward a solution of the problem. Subsequent observation of their life histories resulted in the opinion that instead of animals, they are fungi, and being unicellular, are of the lowest order.

They are now known under the generic term, Bacterium, and have been classified as sphero-bacteria, micro-bacteria, and spiro-bacteria, each class of which, has in its turn been subdivided.

To-day they are commonly classed according to their forms, as micrococcus, bacillus, and spirillum. The micrococci are small bodies of a spherical or may be, of elliptical form, and are of different sizes like other forms.

The bacilli are short rods of different lengths.

The spirilla are of the form of a corkscrew.

That the bacterium belongs to the order of fungi, is based on the fact that they are devoid of that coloring matter of plants which is termed chlorophyl. They differ, however, from other fungi in being unicellular. On the other hand, they like other cryptogamous plants at times reproduce themselves by spores, yet at other periods in their life-histories they multiply by subdivision, like the unicellular protozoa.

The result of modern investigation of the subject of bacteriology has been such that their causative influence in certain pathological conditions can no longer be ignored either by the general practitioner or the dentist as a specialist.

With all the speculation of the past nothing had been learned of the nature of a certainty, until inoculation with isolated bacteria was performed, and the effect noted. That bacteria were present did not suffice to prove their pathogenic significance, notwithstanding the fact that in infectious diseases the result of contact was such as to cause a suspicion of the existence of a specific infectious entity as a cause of the disease.

Step by step doubts have been removed, and the significance of certain varieties has been established. The life histories of the spherical forms have not been as thoroughly studied as have the others, on account of their generally minute size, but enough has been learned to convey the impression, that as a rule they possess a pathological significance in the highest degree.

Of the method of reproduction little is known by reason of their minute size; on the other hand the bacilli by reason of their comparatively large size, have been more thoroughly studied so far as their life histories are concerned.

Their method of reproduction is by subdivision of the original rod, each part of which grows to adult size, only to again subdivide, and so on as long as the medium in which they exist furnishes the requisite nutrition, unless destroyed by accumulation of their own products. As before remarked they sometimes reproduce themselves by spores, which correspond closely with the endogenous reproduction of the unicellular protozoa.

Regarding the sprial forms, doubts have been raised as to whether they should be classed as bacteria, from the fact that their method of reproduction is uncertain; also, that their behavior under the action of re-agents differs from that of organisms which have been demonstrated as bacteria under like circumstances.

The micrococci, for the most part the smallest of the bacteria, are to be found either isolated, in pairs, in chaplets, or in masses, which are termed zooglœa colonies.

In whatever form they may be found they appear to be surrounded by a transparent substance which, under the microscope, has a different degree of refraction than either the bacteria or the medium in which they rest, but it possesses the appearance of being gelatinous.

The micrococci are found colorless, yet in some cases seem to contain a finely divided pigment, in quantity sufficient to impart a shade of color.

The bacilli may present themselves as isolated, or in segments attached end to end; and aside from their rod-like form, appear like the chaplets of micrococci; and, apparently held in place by a gelatinous envelope.

They may be, yet seldom are, found in zooglœa colonies, but more commonly are found in swarms.

The spores appear scarcely as large as the smallest micrococcus, but soon begin to elongate, and continue to do so until arriving at adult age. They, as spores, differ much from the mature bacillus, in that they for a much longer time resist the action of germicidal agents.

The extremes of winter exert upon them no perceptible effect, while the extreme heat of the succeeding summer seems only to hasten their development, for which reason a sterilizing process sufficient to devitalize bacteria may have little or no effect on their spores.

In order to study the effect of bacteria on the animal body, it is necessary to determine its identity as bacteria. That, fortunately, is now more easily done than in the past, as modern methods of treatment have partially if not wholly solved the problem.

There are so many things which closely simulate bacteria, that in the past all granules have been mistaken for micrococci; fat crystals, fibrine threads, and margarine needles have been mistaken for bacilli.

It is now known that the protoplasm of bacteria absorbs and retains analine colors under the action of bleaching agents, which will bleach the structural elements of the animal body, while the bacteria, if any be present, are generally unaffected by it.

During the earlier years of investigation of the subject of infectious diseases little was learned, except enough to create supposition, which, not being proof, gave small satisfaction.

It was found that different forms were present, in greater or less numbers, and the question arose if the disease was the result of their presence, or their presence the result of the disease; or, in other words, whether the disease furnished the conditions under which they might exist and multiply.

Thinking and careful investigators concluded that only by use of pure cultures could the significance of either form be determined.

Experiments determined the composition of different fluid media, in which they might readily grow and reproduce themselves, while it also demonstrated the fact that certain organisms would readily grow in a medium made after a certain formula, and but slowly, if at all, in others. Advantage was taken of this fact to produce pure cultures by successive plantings through many generations from the original culture, the medium being sterilized by being subjected to long continued boiling in a closed flask. Notwithstanding the utmost precaution, it was found that pure cultures could not be produced with any degree of certainty—one or another being occasionally found present beside the one wished for, and all owing to the fact of the medium used being a fluid through which the bacterium could, by its power of motion, change its location, and thus escape observation for the time.

The difficulties attendant upon attempts at isolation in fluid medium, resulted in the discovery and adoption by Koch in 1880, of a solid medium upon which it was found that they would grow.

His method consisted in the substitution of a compound composed of a mixture of a solution of gelatine, beef extract, and blood serum; the proportion of either ingredient varying in accordance with the species to be cultivated.

The medium, after being sterilized, was spread with a sterilized instrument in the thinnest possible layer on a sterilized glass slide, after which the bacteria were planted in the medium by means of a sterilized needle or other proper instrument, and the slide placed under sterilized bell glass.

Through this process, the growth could be watched, and, it was found that a mixture of different bacteria could only occur through a continuity of growth; and by successive plantings, a pure culture could be finally obtained; while the whole process of growth and multiplication could be observed at pleasure.

Having thus obtained pure cultures, the next step was inoculation of the healthy animal body, and a study of its effects. In inoculation experiments, as a matter of course the lower animals have been the chief sufferers, and through their employment for the purpose, it has been definitely settled that up to this time, a specific bacterium is responsible for either one of nine specific pathological conditions.

Chicken Cholera, Pyæmia (Micrococcus), Septicæmia (Bacillus), Gangrene (Coccus), Erysipelas (Bacillus), Tuberculosis (Bacillus), Leprosy (Bacillus), Relapsing Fever (Spirillum) and Anthrax (Bacillus).

Late investigations have also shown that, in other diseases, a certain specific bacterium is always present in each, yet their specific significance has not yet been demonstrated to a certainty.

It has been found that inoculation with certain varieties produces no specific infectious diseases; but is the cause of sufficient irritation to result in high grades of inflammation.

Having proven that certain diseases were due to the presence of certain specific organisms in each case, the question why, was next in order. It was soon noticed that when putrid fluids containing bacteria were injected into the blood of animals, characteristic symptoms followed, and which closely resembled those resulting from the administration of toxic doses of various vegetable alkaloids; and it was found that whenever these fluids of putrescence were sterilized by long continued boiling, or deprived of their bacteria by filtration through clay, they yet retained their poisonous qualities, and produced the same effect on the animal economy as before sterilization, which led to the conclusion that the bacterium itself was not responsible for the symptoms.

Interested chemists however succeeded in extracting from these fluids various alkaloid products, which produced the same toxic effects as the fluids themselves, thus proving that not bacteria, but their waste products are the causes of the poisonous symptoms noted.

As before remarked, experiments demonstrated the fact that inoculation with certain bacteria caused an irritation, followed by inflammatory symptoms of greater or less degree of violence.

This brings us to a consideration of the pathological significance of the bacterium to us as specialists, and which also involves a consideration of means to be employed in prevention of disease of bacterial origin.

The dentist is called upon to combat pain most of all in two different tissues; namely, the tooth pulp and the peridental membrane, and, the greater number of cases which present themselves are those of acute periodontitis, associated with a putrescent pulp, and although technically it is a digression, the remainder of this paper will be devoted to the consideration of what the writer considers a rational treatment of pulpless teeth, and which involves a recognition of the pathogenic significance of bacteria.

Within the past few years, there has seldom been held a meeting of dentists, without the reading of one or more papers on the subject of the treatment of pulpless teeth.

Within the past three years it has been the good fortune of the writer to hear a number of them. Some were of a character which at once showed a familiarity of the writer with his subject. The student and clear thinker was revealed in every sentence. Familiarity with the past history of the subject was at once recognized, and all present naturally felt that to be absent would be to lose a great amount of information.

Others showed that in view of the light of the latter part of the 19th century, the writers were content with the methods of a quarter of a century ago. There was no recognition of the value of late discoveries, but the treatment seemed to be founded on nothing like a scientific basis.

Before the Section of Dental and Oral Surgery of the Ninth International Medical Congress held at Washington, a paper was read by a man occupying the position of Professor in a Dental College, on the subject of which he showed an ignorance which would be lamentable in the ordinary practitioner.

To the intense delight of your orator his fur was first rubbed in the wrong direction, next he was sat down upon, thirdly and lastly he was in a figurative sense skinned alive.

Every dental practitioner has among his patients a certain number who call upon him not to prevent pain, but because of pain. They are generally negligent in the personal care of their teeth, but when in an agony of pain they fly to the dentist for relief.

Examination generally reveals the fact that the difficulty is referable to the presence of a dead pulp.

But why should a dead pulp cause the difficulty? We are told it is caused by a pressure of gases imprisoned in a closed pulp chamber. Very good. But why do we find the same condition in cases where the pulp chamber is open, and thoroughly so from decay?

Again what causes the gases to be present in a closed pulp chamber? We may say that the gases are a product of the decomposition of the tissues of the dead pulp. But why does the pulp decompose within the closed pulp chamber? If the same pulp tissue at its death were immediately sterilized and hermetically sealed within a sterilized glass cell, it would never decompose while the cell remained intact, but would remain sweet until the end of time.

But why should it not remain as secure from decomposition within the intact pulp chamber?

But is the pulp chamber intact, in the same sense that the sealed glass cell is?

That question can be more easily answered after a study of the minute anatomy of dentine. The dentine of a tooth, is, above the gum covered by enamel; below by cementum. It consists of a calcified cartilagenous matrix. The pulp chamber occupies the middle of the dentine, to which it conforms in shape.

Entirely surrounding the pulp, and within the walls of the pulp chamber, is an envelope, which consists of columnar and pear-shaped cells, attached to which are processes which penetrate the dentine and rest in minute tubules, which radiate from the walls of the pulp chamber toward the inner surfaces of both cementum and enamel.

These tubules are branching and anastomose one with another, forming a network as they approach the enamel and cementum.

One naturally inquires what that has to do with decomposition of the pulp, and the formation of sulphuretted hydrogen gas in the pulp chamber. I answer that it has everything to do with it. Decay penetrates the enamel until it reaches the dentine. Microscopical examinations reveal the fact that bacteria are always present in decaying tooth substance, and a properly prepared section shows that they are always at the front in line of battle, as well as with the skirmishers.

The pulp (being the formative organ of the dentine) after a time commences to throw up breastworks before the line of battle, in the form of what we know as secondary dentine. Decay continues to advance until it approaches the pulp chamber so closely that the pulp is in a state of constant irritation from thermal changes.

Should the irritation be sufficient to induce acute inflammation we term it pulpitis, and the vascular change which causes it may be of sufficient magnitude to cause strangulation of the pulp at its apical portion, and its consequent death. With its death it can offer no further resistance.

The walls of its chamber being already tunneled for the accommodation of the fibrils of the odontoblasts, the bacteria easily enter and commence their work of destruction of tissue. Their multiplication is sufficiently rapid to thoroughly plug the tubules, and thus prevent the escape of the formed and forming gases.

The result of the pressure of accumulated gas is irritation and subsequent inflammation of the peridental membrane, and it may be of an intensity sufficient to produce a circumscribed necrosis, both of itself and the surrounding alveolar bone, and which we know as alveolar abscess. We have asked why we have observed the same symptoms, with the same termination, even when the pulp chamber is open. Before answering that question we will make an examination into the histological relations of the pulp and peridental membrane, the one with the other.

A section made vertically through the center of a tooth, and at the same time transversely through the jaw in which it rests, will furnish us the means of studying this relationship, as well as the avenues through which it is formed.

This relationship is one which is in nearly every case ignored by writers upon the subject of treatment of pulpless teeth. An examination of the section alluded to will show the pulp to be composed of the simplest tissue to be met with in the animal body, namely, mucous tissue, the cells of which are of an embryonal type.

Embedded within it are blood vessels, nerves, and connective tissue fibers.

An examination of the apical portion of the root reveals the fact that the walls of the foramen through which the connection between the pulp and peridental membrane is established consists for the most part of cementum, and we find that as the pulp approaches the wall of cementum it undergoes a modification, whereby the greater part of the embryonal form of tissue is eliminated; the fibrous form predominating, thus fitting it for a union with the peridental membrane, which is formed of fibrous connective tissue.

The central canal is not the only avenue through which the pulp may form a connection with the peridental membrane.

Transverse sections of the apical portion of a tooth reveal numbers of small openings through the cemental walls of the principal foramen, and through which numbers of the connective tissue fibres pass toward the peridental membrane, and the writer has made sections showing that some had taken a short cut through both the dentine and cementum.

We have been thus particular in a study of some of the histological features of the tissues involved, that we may anticipate possible dangers ahead.

We have learned of the irritating effect of the waste products of bacterial life on living tissues, and success in treatment of pulpless teeth will depend upon the methods employed to prevent infection at the present and in the future. In case a pulpless tooth presents, unaccompanied by complications of any kind whatever, the first necessity is a free opening of the pulp chamber.

This should be done by carefully avoiding any pressure in the direction of the long axis of the tooth.

Use lateral pressure only, until an opening has been made through the wall of the pulp chamber, and continue until the whole cavity is opened.

The next step consists in removal of the putrescent pulp, which may be nearly or wholly accomplished without the use of instruments, by repeated injections of Marchand's hydrogen per-oxide, a certain proportion of the oxygen of which is very loosely held, and which is readily yielded up to combine with the carbonaceous elements of the decomposing pulp tissue, while the amount of force exerted by the use of the Dunn syringe is sufficient to wash away the debris.

But the work of rendering the pulp chamber aseptic does not end here.

We remember that bacteria sometimes reproduce themselves by spores, and, also that while many germicides readily destroy bacteria, their spores resist their action, and while hydrogen per-oxide possesses a certain power as a germicide it is not safe to rely on it to destroy spores.

It is therefore necessary to employ some of the more powerful agents for that purpose.

After removal of the pulp and a thorough drying of the canal, the application of an aqueous solution of mercuric chloride of a potency of one part to five hundred of water, will do the work, if left a sufficient time in the pulp cavity as a dressing, the opening being closed by a water-tight filling.

It is unnecessary to state that the rubber dam should be applied before commencing the operation.

The antiseptic dressing should be left in the pulp cavity long enough to insure probable penetration of the tubuli of the dentine, and the numerous foramina of the apical portion of the root, which must be rendered thoroughly aseptic.

Our old stand by, iodoform, while not in the strict sense of the term an antiseptic, is a valuable agent for retarding the multiplication of bacteria, and a paste made of it by addition of some of the more active germicides proves a most useful dressing.

An iodoform paste made by addition of the new germicide, Campho-Phenique, has in the hands of the writer been attended with most excellent results.

After the dressing has remained within the pulp chamber for a few days, the root can be filled with any of the standard materials now used for the purpose, and the operation completed, with a certainty of success if the preliminary antiseptic treatment has been thorough, and no complications previous to commencement of the work.

The writer deems it unnecessary to make allusion to all the different antiseptic agents and their special values as such, for that has been most ably done by Dr. Black, and its publication in the journals has placed it before the reading dentists of this country and the world, and to repeat it to others than reading dentists would insure its falling on deaf ears.

Gold Inlay.*

By G. V. I. Brown, D. D. S., Duluth, Minn.

The study of inlays of various kinds and forms, seems to my mind to afford the most ready solution of the problem of stopping cavities of decay, preserving the contour and natural appearance of the teeth, and meeting at the same time the very difficult requirements of a material suitable to that kind of tooth structure which has thus far been most commonly treated with success by the use of the cements and gutta-percha.

I do not believe that when we shall have become dental veterans our followers will be obliged to resort to a material for filling which must be impacted with a mallet, piece by piece, requiring for its insertion the continuous sitting of the patient sometimes for several hours, as we are required to do with the present process of gold filling of which we are all so proud.

Gold foil serves me daily, as it does each one of you, in the preservation of my patients' teeth, but I am sorry for their sufferings, and regret most deeply the ignorance which compels such torture, when by looking forward dawns a brighter day, when force shall be gone and wisdom hold her sway—behold the turnkey and the mallet passed away.

My method of making these inlays is as follows :—Prepare the cavity by making all walls as nearly straight up and down as is consistent with the shape of the cavity on all proximal surfaces, and wherever it is necessary to cover a masticating surface bevel the edges of the tooth well, so that your gold piece may rest upon the enamel slightly, and allow a more perfect polishing and finishing, besides gaining strength from the support. Take an impression of the tooth, and if the cavity therein be a proximal one use its next neighbor as well, to serve as a guide in shaping. Run a cast in plaster, upon which build out in wax such an amount of contour as has been lost, and which it is desirable to restore to give the cast the shape of a perfect tooth. The impression, unfortunately, cannot always be taken with such accuracy as is desirable, but one can always get the general shape of the tooth and outline of the cavity, so that, with a little measurement, such inaccuracies as may exist can be remedied by making the piece slightly larger than the surface to be covered, and trimming to proper size and shape by actual trial in the mouth.

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*Read before the Southern Minnesota Dental Society, October, 1889.

Having thus perfected your cast to a pleasing outline, the next step is to run a die of tin, babbit, or other suitable metal, in the usual manner, and over this swage a piece of gold plate about No. 28 in thickness, sufficiently large to cover the surface of the cavity, trim and shape to fit the outline of the cavity as nearly as possible.

Solder inside little platinum pins or pieces of gold, of any size and shape your judgment may dictate, in order to hold the gold in place most securely when fastened, and at the same time not interfere with its adjustment by touching the walls of the cavity.

I find usually a narrow little strip, bent in the middle and soldered just where the bend is made, leaving the ends free to be easily adjusted, serves as a simple and effective means of anchorage. If the tooth be a dead one, a pin may be attached, which will extend up into the canal, thus making the anchorage beyond question.

In such cases as there may have been but little of the proximal surface lost, it is quite unnecessary to make a die as described; simply bending the gold with pliers, slitting and soldering where corners need to be rounded is quite sufficient, but where the needed restoration of contour is very great, as frequently happens, I have found the above described method to be the most suitable in producing a perfect and sightly operation, especially in extensive crown surface exposures.

Either cement or gutta-percha may be used in fastening in the mouth. If the latter, fill the cavity not quite flush with the edges, hold the piece in the flame of a spirit lamp with pliers until warm enough to soften the gutta-percha, and press in place, afterward smoothing off all excess at the edges with a pledget of cotton saturated in chloroform. In using cement, mix a little thinner than for filling purposes.

As to the respective merits of the two materials for this purpose, my experience is decidedly in favor of the cement, because it is more certain of being perfectly set in and around any pins or fastenings, there being less inclination to pull away when the piece is being inserted, and its greater hardness adds greatly to security against its being displaced afterward.

I have found that where there is a narrow edge of cement exposed as commonly occurs with even the most perfect fitting inlays of whatever kind, that there is not the rapid disintegration one would expect from its action when used as an unprotected filling under similar circumstances. In one of my cases, where a piece of porcelain tooth was inlaid upon the anterior proximal surface of a superior cuspid, more than six years ago, a recent examination showed but very slight change in the line of cement between the porcelain and the natural tooth, and I therefore do not think with a reasonably well-fitted cover we need be afraid to use it in almost any position in the mouth.

Now though really very simple and easily accomplished in every office where gold crown work is done, and all the necessary appliances at hand, yet when I hear each detail of the process read in this way it seems like "much ado about nothing," and I think I hear the question arise "Cui bono?" for what good? and I answer hopefully for such good as no other filling can do in the place accorded. This must the gold inlay accomplish else it cannot claim a rightful place upon the list of our operations; it must necessarily begin its good work at a point where all ordinary fillings most frequently fail, and fill the void between this and the gold crown, our "*dernier ressort.*"

Take for example a cavity similar to those cavities frequently found in bicuspids and molars where decay has removed the entire proximal surface, extending as well upon the masticating surface, reaching up or down, according to its situation in the jaw, until the enamel and gum line has been passed and its ravages have carried it far into the territory of the cementum. Add to all this the consideration of frail walls and poor tooth structure, and I ask what would you do with it?

Perhaps you suggest a tooth crown, but with the rest of the tooth in a fair state of preservation I object to its destruction, even for a crown tooth. Gold we will of course agree to be out of the question under these conditions. Copper amalgam next suggests itself for consideration, but without entering into a discussion of its obvious merits and claimed demerits, its color at once dismisses it in anterior proximal surfaces where it can be seen.

But we are all agreed I am sure, that the cements and gutta-percha stand par excellence, in their adaptability to frail tooth walls, and successfully combatting the ravages of the micro-organisms in the soft tooth structure, and if we can successfully retain all the advantageous properties of these materials, at the same time doing away with their disadvantages in the want of contour and the susceptibility to the wear of attrition, and disintegration by the acids of the mouth, giving instead a perfect contour, capable of such resistance as the gold surface affords, making a cleanly, sightly operation when finished, having occupied the patient but a few minutes at any one sitting, having given little or no pain, and entirely avoided such nervous strain as always accompanies severe operations, in a greater or less degree, surely this seems a promising summary of advantages and is worthy of a trial.

Large buccal cavities, where gutta-percha is so essential to success, strongly recommend themselves for this treatment, because the gold can be so easily trimmed and pressed into place. In large crown cavities in first molars, when the teeth are of poor structure, and it is desirable to fill with cement until the patient has attained greater age and general structural improvement, this method of protecting the cement is particularly desirable. I have found it also useful in superior incisors, when the decay has extended far around from the proximal surface into the palatine surface, leaving such a frail anterior wall that to insert a gold filling it would be necessary to remove the entire corner and build down with foil, thus destroying the natural appearance of the mouth, and where the rapid wearing away of cement filling upon this exposed surface made it necessary to have protection. One or two such cases in my practice seem to be highly satisfactory, protecting the cement and preserving thus to the public eye the unchanged appearance of the tooth.

I lay but little stress upon my method of making—there is nothing new about it, and I feel sure that if the attention of my hearers can be favorably called to the advantages of this work, before another meeting many simple means of gaining the same end will be accomplished, and that upon the tide that is setting in so strongly, bringing us inlays of porcelain, inlays of vulcanized rubber, inlays of anything that will protect cement, will also be borne the inlay of gold, with a simple method and appliances for making, supplied by the assembled geniuses of southern Minnesota: Then will the object of this paper be accomplished.

CARE OF THE DECIDUOUS TEETH.*

BY C. W. NUTTING, D. D. S., SPRING VALLEY, MINN.

Mr. President and Gentlemen:

In presenting this subject to you I shall probably present very little that is new, or unfamiliar, but I hope I may enlist your interest, that the subject will be thoroughly discussed, and that we may all derive much benefit.

As readers of Dental Literature, we all have undoubtedly observed how little or no mention the temporary teeth have received.

Perhaps their littleness and transitory existence has been sufficient to pass them by. I ask you who are present here to-day, why they are thus ignored, when in their care depends the perfect development and eruption of the permanent set.

I think that no child should ever have a tooth sufficiently decayed to ache, and no mother should ever remain in ignorance as to a preventive.

Considering the natural anxiety for the welfare of her children, physically as well as mentally and morally, kindly advice given respecting her care in regard to furnishing abundant tooth pabulum, from the very day of conception, will never be rejected by a sensible mother.

Thus her progeny will be born with the tooth-germs so well developed that they will erupt at the proper time, with no more than the natural disturbance, and with little else but cleanliness to keep them perfect.

To this end a prospective mother should be taught how much depends upon her own efforts.

Teach her that the teeth are not, as many suppose, developed in a few weeks previous to their eruption, but that they date their existence almost from the very beginning of fœtal life; that as early as the sixth or seventh week after conception the germs of the teeth are forming in the dental groove, though soft and pulpy until the fourth month, when they begin to calcify, and that the whole tooth, except the root, is being solidified before it makes its appearance.

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* Read before the Southern Minnesota Dental Society, October, 1889.

Teach her how the tooth material is required from the very inception of germ formation, and that she alone can furnish it, which must be done through the proper foods.

Teach her what this tooth-making material is, and where the essential elements are to be found, and that a proper and sufficient amount is necessary.

Teach her that these principles must be applied, and its precepts thoroughly practiced, not only during the period of gestation, while these elements are supplied through her blood, but also during lactation, when the only source of these elements for further development of the teeth are through her milk, and if, while weaning, she will take the same precautions regarding her child's food, with scrupulous cleanliness of the teeth—a strict obedience to the laws of health—her progeny will surely have good teeth.

I will not describe the successive steps of the formation and eruption of the temporary teeth, with which we are all familiar, but what I want is to bring out a few important points, giving as a means, intended by nature, by which we can aid in causing them to erupt at the proper time, as provided by nature, and a few effects resulting from dentition.

We all know that few children attain the age of six years with perfect temporary teeth, and I think I am safe in saying that two-thirds have defective first permanent molars, soon after eruption.

Upon careful inquiry it has been found that seldom is there any extra provision made by change, or supply, of food for the additional tax upon the mother. From the system only can the nutrient elements be drawn, which are required in the daily waste in physical organization, and also in building the tissues of the babe.

Chemically good food offers all the elements necessary for elaborating good blood. Good blood supplies all the material to construct perfect tissues; perfect tissues constitute the perfect organization of the whole being.

The blood, holding in solution all the elements that enter into the formation of the teeth, it must be furnished through the food with a sufficient supply of the elements to meet the demand; for, if the supply is equal to the demand, and the system is in condition to digest and assimilate it, a perfect tooth-formation will be the result, but if the supply be meager either the child or the mother must suffer the loss.

Dr. G. R. Thomas has wisely said: "The child, while dependent upon the mother, gets lime, phosphorus, silex, potash, and all the elements of which the teeth are composed, in just such proportion as she gets them from the food, nature provides in their natural proportions. But where can the child, in its forming state, get these necessary elements, if the mother lives principally on starch, butter and sugar, neither of which contain a particle of these elements. Nothing but a miracle can give her a child with good teeth, and especially well enameled." In every 100 parts the enamel contains 96 of inorganic material, the dentine 72, and the cementum 67.

Of this inorganic material, the phosphate and carbonate of lime compose the greater part; the remaining elements, magnesia, soda, silex, chlorine, etc., being but a small proportion of the whole, and are found abundantly in the meat, eggs, vegetables, milk and other common articles of diet; there is scarcely any liability to fail in receiving an adequate supply.

But in furnishing the blood with the lime salts there must be extra provision made outside of the regular diet.

A very simple remedy, which is used a great deal, and recommended by such men of the profession as Drs. Atkinson, Abbot, Cushing and many others; is the free use of lime water: This is easily and cheaply prepared at home, but somewhat more expensive when procured of the druggist under the label of aqua calcis. It is not only beneficial in supplying the blood with lime salts, during gestation and lactation, but also excellent as an alkaline mouth wash. It is true that there are conditions of the system in which lime may be admistered in vain, owing to the lack of assimilation, but by first correcting such conditions the assimilative process will again be restored.

So generous is nature that no article of diet furnishes but one single element, and so various has she combined them, that one can hardly go astray if her gifts are used aright.

By thus urging upon the mother, father, and physican, the great necessity of furnishing the proper food in sufficient quantity to meet the demand for perfect tooth formation, we may gain such a confidence as to enlist a thorough interest in perfect tooth development.

And now when the child has became dependent upon out side resources for further nourishment, the same precautions must be used regarding the child's food, and especially cleanliness of the mouth.

Even if it has been fortunate enough to be blessed with the twenty teeth well developed and erupted, they are usually so little cared for that they are a source of great annoyance to them, whereas if proper preparation be made for this change from the mother's nourishment to that of its own system, by the selection of such foods that are easy of digestion and contain such elements that are necessary for further construction and nourishment of the teeth, what a vast difference there would be in the state of affairs.

Now I maintain that by pursuing the right course, regarding food and care, not only with the mother but also with the child, after it becomes dependent upon out side resources, good sets of temporary and permanent teeth will be the result, or at least the otherwise bad effect will be greatly ameliorated.

We attend conventions, read journals and text books and are taught the best methods of arresting decay, the best filling material, and its mode of using, the various appliances used to aid us in the operation and how to treat the teeth, whether dead, sensitive or otherwise; almost to the exclusion of how to make good teeth before they break through the gum.

The appearance of the baby's first teeth is watched by the mother with intense interest as the most wonderful development in the human economy; consequently the more we direct our attention to this subject and aid in bringing forth a perfect tooth development the more we will lessen the necessity of operation and the sufferings of the little ones.

After knowing how to provide the proper chemical elements, necessary for formation and growth of the teeth, we reach another important point in the care of these organs before their eruption, which is the effect of various diseases on the tooth structure.

We are aware of the vast changes that are constantly taking place in the infant. The rapid heart beat and the quick pulse plainly tell us how the heart is exerting its utmost energy to supply these fast-growing tissues with a sufficient building material. Now, the slightest injury to one of these organs will prove very disastrous, by depriving it of the proper assimilative power.

During disease there is a lack of appetite, followed by a lack of nutrition, and this in turn followed by a stagnation of the parts affected. If it be the organ supplying the teeth, there will be a lack of tooth material, and as a final result, the enamel will be marred by grooves, pits, notches, or white spots ; showing the un failing and indelible marks of interrupted development.

Before birth such diseases as small-pox, scarlet fever, scrofula, consumption, and other inherited taints of the blood, make a destructive attack upon the teeth, or if suffered by the child before eruption, will have a like result. These marks of interrupted development attack the tooth at that part indicating calcification at the time, arresting the growth until the disease has been corrected. Any general disturbance, such as to interrupt the assimilative process will be detrimental to the perfect formation of the teeth.

Systemic diseases may so derange the nerves as to degenerate the chemical solids of the teeth, and thus destructively affect them.

Then how can a mother better assist in perfect tooth development than to guard against all such diseases during gestation, which are so disastrous to tooth substance.

Many diseases undoubtedly may, and often do occur, during the process of dentition, but it does not follow that teething is the cause any more than it is the result of these diseases. When we consider the early age at which first dentition commences, and the fragile and irritable condition of the system, new work being put upon the alimentary glands to keep pace with the growing tissues, combined with the efforts made to liberate these organs from their bony cells, and superincumbent gums ; can we wonder at the slight cause, to much suffering sometimes entailed.

The constitution at this tender period often receives a shock from which it never recovers ; and the seeds of many chronic diseases are caused to germinate, which otherwise in all probability would have remained dormant.

Dentition is a normal physiological process, and where the condition of the mother during gestation, and the previous health and temperment of the child have been favorable, the absorption of the gums keep pace with the growth of the teeth, and there will be but a slight irritation and the distress will be almost entirely local.

But under the unfavorable conditions we meet with a more or less increased irritation, frequently so severe, not only to affect the mouth locally, but the functional operations of other parts of the system, where febrile symptoms of a general, and of a more or less aggravative character supervene, frequently accompanied by drowsiness, diarrhœa, eruptions, or perhaps convulsions. The increased flow of saliva caused by the irritation becomes acid which is one of the chief causes of the "diarrhœa of teething," and could easily be prevented by an alkaline treatment.

Convulsions may be caused by diarrhœa when it is so copious as to occasion great emaciation. Another cause of convulsions is in a great amount of inflammation causing too much flow of blood to the head, and this at the time when the brain is large in proportion.

To these symptoms we may add cough, spasms of the muscles of the face, and various eruptions; but to attempt a description of all the effects of first dentition, would involve the enumeration of nearly the whole catalogue of diseases peculiar to infancy.

I have mentioned these few effects for the purpose of impressing upon our minds, the great good we can do, by preventing or at least ameliorating such bad results, and the benefit we can be to the unborn generation by our teachings.

It is a sad fact that most parents think that because the temporary teeth are to serve but a short time, it is of little consequence whether they remain and are cared for until nature removes them, one by one, as their successors are ready to come forward, by a most beautiful process—the absorption of the roots—or are lost a year or two earlier, but this is a great error, and one productive of much mischief.

As I said in the first of my paper that the permanent teeth were dependent upon the temporary ones for a perfect development and eruption, this alone should suffice for their retention, but this is not all. The perfect symmetry of the arches is dependent upon them, where a too early extraction will cause a shrinkage of the alveolus and a crowding together of the remaining teeth, which will result in the irregular eruption of the permanent set.

To the child the temporary teeth play just as important a part in the mastication of the food, as do the permanent ones in the adult. Food cannot be properly assimilated, unless it is properly digested, or properly digested unless it is well masticated, and it certainly cannot be well masticated, if the organs of mastication have been removed.

So, under every circumstance, retain these little teeth if possible, by judicious care and the various methods of operation already very familiar to the dental profession.

They should be given special care, and also closely watched from the very first appearance of the incisors.

The mother should be instructed, if she does not already know, to wash the mouth carefully, that no particles of milk or food remain about the teeth or folds of the soft tissues, to decompose and cause disease or decay; to procure a camel's hair or soft tooth brush as soon as the eight incisors are erupted, and begin a regular systematic care, which alone is productive of good results. A prominent writer has said: "The necessity for cleaning these teeth thoroughly, every time food is eaten, affords an argument for regularity in eating, for children who are eating something all day long will never have clean teeth."

The child, being taught the use of the brush and pick early, the habit will grow upon them and remain permanent through life.

Especially in sickness, when they are usually neglected, should the greatest care be taken, for then the fluids of the mouth are generally abnormal, which, in combination with the decomposing food and external influences, are productive of much evil.

I believe that the deciduous teeth should be filled as soon as decayed, if the child is no more than a year old.

I maintain that much knowledge lies hidden, which, if given vent, would be productive of great results by opening the eyes of the ignorant parents, thereby enlisting their sympathy to a perfect tooth development.

I have endeavored to bring out such facts as I thought would be of interest, and might induce us to encourage a better understanding in this field, necessarily leaving out many important ones for the lack of time and space, as we have many papers of importance to come before this Convention; but if I have interested you, and awakened your thoughts anew to get the great need of a good first set of teeth, I am satisfied.

OSSIFICATION OF THE PULP — PULP NODULES.*

BY DR. H. H. FITCH, PEKIN, ILL.

The subject of "Pulp Nodules" or "Ossification of the Pulp," is one of great interest to both patient and operator.

The mystery which shrouds these formations as well as the difficulties both of diagnosis and treatment, are simply what the Irishman would call a "holy terror."

If there is anything which is calculated to make a dentist feel silly, to make him swear like St. Peter and to deny his profession, it is to stand before a patient whose thirty-two teeth look as perfect as the pearls of a queen's necklace, and to be obliged, before that patient can sleep to extract them all.

I have heard of dentists who were so fortunate as never to have seen a pulp nodule in their practice; to them I would say, as Squire Weston said to the parson: "Vot 'es never had a bastard, 'es been lucky, very lucky."

The first case of Pulp Nodules which I reported I will now copy as part of this paper, from *Johnston's Dental Miscellany* of February, 1878, page 63: "On the 25th of August, 1877, Belle Ward, a strong working girl about twenty years old, came to my office to have two lower front teeth extracted, because they were sore and loose. She had evidently been salivated, and the teeth in question were denuded to very near the apices.

I persuaded her to have them treated, and also to have a crown fissure cavity filled in the left lower molar. The cavity was not deep. The only apparent disturbance was the inflammation of the gums consequent to the use of mercury.

The patient complained of great tenderness of the teeth themselves when she "bit anything onto them," and when she "took anything hot or cold into her mouth." I judged that this great sensitiveness could be accounted for from the fact that she was just recovering from an attack of malarial fever — having observed the same symptoms in persons just recovering from typhoid.

The teeth were carefully cleansed, and the gums painted with iodine. This application was renewed every day. In less than a week the teeth were firm and the gums of normal appearance.

Still the teeth were sensitive, and August 19th, fourteen days from the first sitting, the patient came again, saying that the filled tooth was killing her. The swollen condition of the surrounding parts indicated alveolar abscess. Immediate extraction was decided upon, after which I at once split the tooth and found a little nodule of bone in the very center of the pulp. This ossification or dentification or calcification was also found in the root canals. Twenty-six days later I gave the patient ether and removed three more teeth, and four days later still one more, all in substantially the same condition. The development of the nodules was from the central portions of the pulp. The most marked symptoms was the exceeding sensitiveness of the teeth in question to the thermal changes or the slightest pressure.

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* Read before the Central Illinois Dental Society, October, 1889.

Have just received word from the patient that the other teeth are troubling her the same way, and that she will have to lose them all before she can have any comfort.

I have found cases recorded when one, or at the most, two teeth were affected in this manner, but not a case where the trouble was so general.

Harris gives ossification of the pulp as the result of irritation. This would explain that ossification which follows the wearing away of the tooth by mastication, but hardly a case like the one under consideration.

I sent two of the teeth to Dr. Homer Judd of St. Louis, and his remarks will be found in the November number of the *Missouri Dental Journal*, page 562.

I would say in conclusion that my patient fully indorses Beecher's present compensation theory of hell."

Dr. Judd's remarks were as follows:

We have just received a couple of specimens of calcified pulps "in situ" from Dr. H. H. Fitch, of Pekin, Ill., together with a short history of the case. The calcification or dentification was evidently eccentric, commencing in the pulp cavity toward the center. The teeth were very nearly sound with a hard flinty structure and had given a great deal of pain for sometime. They were lower molars. He makes special mention of that extreme degree of sensitiveness which has been recognized by others in similar cases, and which is one of the most characteristic signs of this affection. In some cases neuralgic pains of the severest character are induced by the slightest irritation, even by a cold breath of air. We have not made microscopic examinations of these molars, but presume that the dentinal tubes are more or less clearly marked in them. We have seen a good many similar cases and have succeeded in diagnosing the calcifications in several in which the diagnoses were subsequently verified.

The hyperæsthesia was fully recognized and claimed as a constant symptom of this affection in a paper read before the Missouri Dental Society six or seven years since, and we have received much corroborating testimony since that time, which has strengthened our conviction as to the correctness of the opinions thus advanced, and now this case which was extremely well marked, comes in with its testimony in the same direction.

In response of careful inquires I find that all the teeth in the above case were extracted. (I will also state that before extracting the teeth in the above case, I gave her a list of dentists in Peoria, whom she said she visited, but the only one who gave an opinion said the teeth should be filled with gold.)

I recall several cases where I have tried in vain to save part of the teeth, and failed from the fact that the neuralgic pains were too great to be borne by the patient, and upon extration I found both exostosis of the root and nodules in the pulps.

It is not possible for me to say which of these abnormal conditions caused the suffering. I have three of these cases in mind in each of which, the patient's general health was seriously impaired for years by the constant nerve irritation thus produced.

These patients were ladies from thirty-two to forty-five years of age, and had each suffered from tartar, which may possibly account for their trouble through irritation. In all of these case the general health was good after the extraction of the teeth.

The last case which I shall present to your notice, and which is the occasion of my bringing this subject before you, is as follows :

A lady of thirty came to me complaining of "jumping pain in her teeth and that anything hot or cold hurt them." The tartar was carefully removed and the necks of the teeth touched with iodide of zinc, and the patient directed to use quinine.

The teeth were practically sound. There had been a little absorption of the gum about the left second upper molar. The pain continued, and on June 18th, extracted one tooth, 20th, two teeth, 23d, two teeth, 24th, two teeth, 28th, four teeth; 29th, twelve teeth; July 5th, nine teeth.

There was no cessation of the pain until the last tooth was out, and there has been no suffering since.

CARE OF CHILDREN'S TEETH.*

BY DR. G. B. DILLON, STERLING, ILL.

The first thing in the care of childrens' teeth is a proper regard for their cleanliness.

This must be impressed not only on the children, but upon the parents as well.

Children generally come to us only to be relieved of immediate pain, and when we have done that, want no more of us until they need relief again.

To relieve this pain and fill immediately is hardly to be thought of, but if we allay the pain and stop the cavity lightly by cotton, covered with shellac or chloro-percha, we have made the tooth comfortable and laid the foundation of future work.

In preparing a sensitive cavity for a child, I cut away gently, but quickly, so much of the dentine as is necessary to retain a filling. Dry the cavity with cotton and warm air, cover with a light coat of carbolized resin, then over this place a small disc of gutta-percha. If the pulp is nearly, or quite exposed, cut out the center of disc, put in a drop of chloro-percha and place a second disc over all.

The cavity may now be filled, or may remain some weeks on trial, and in the meantime the smaller cavities may be, and they *should* be filled.

There is no use, when a child comes to us with one or two aching teeth, to fill or treat them and let the others go. In that way we are almost sure to lose the patient and he lose the teeth.

We need not deceive the parent or child, but explain to them the necessity of doing it thoroughly, and of doing it while treating the larger and more sensitive cavities. In this way we can control our patient and have a chance to watch the teeth for a while at least. We may sometimes lose a patient this way, but not often, and it is the best time, if he must be lost at all.

Tin, or some amalgam composed largely of tin, is, in my judgment, the best filling for all the deciduous teeth, also for the first permanent molars, when they have to be filled at an early age, say, under ten years.

My treatment of exposed or devitalized pulps in deciduous teeth has not been satisfactory, and I am ready to receive instructions from any one present who has been uniformly successful in this class of operations.

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* Read before the Northern Illinois Dental Society.

In case the deciduous teeth are not eliminated by process of absorption at the proper time, they should be by the forceps.

If for instance one of the central incisors is lost and the other retained, the tooth first in will encroach on the space intended for the others, and it in turn will override the first, making an unsightly mouth and predisposing to decay. The same may be said of the cuspids except that the irregularity will be more apparent, and yield less readily to treatment, although the tendency to decay is not correspondingly increased.

At the age of about six years there appears in a child's mouth that useful but much abused tooth, the first permanent molar, and it generally comes into very bad company. All the other teeth are undergoing a process of absorption, and many of them, perhaps, of decay, so that the first thing this tooth touches, even before it sees the light of day, is a conglomerate mass of meat, bread and vegetables in an advanced state of putrefaction and swarming with bugs (holding high carnival), in a posterior cavity of the temporary molar.

Against this mass of decomposing animal matter, the tooth is held for weeks, months and years unless sooner destroyed, and when the pain is no longer bearable, the child is brought to the dentist and the parent is horrified to find that this is a "second" tooth.

It is then part of the care of children's teeth to show them and their parents these dangers. When you have occasion to extract a deciduous second molar the sixth year molar should be examined thoroughly and if there are any cavities they can be much better filled, especially if on the anterior surface before the second bicuspid takes it place.

These teeth are worth all the care and attention we can give them and deserve our best efforts, and so long as there is any hope of saving them with living, healthy pulps, I would use every means to do so. But I do not think it best to cap the pulps of these teeth. I am almost sure it is not best to devitalize the pulp and fill it at so early an age. By this means the tooth may be retained for a while, but will be lost just at the time it is most needed, and when it is too late to bring a second molar into its place. Except in rare cases its loss will not be felt if extracted early, and the second and third molars will come forward without tilting and fill the space and do better and longer service than the three would do even could they all be retained.

If we keep a child's teeth clean and the cavities all filled until he is ten years of age, and have taught him to clean them properly and keep them so — we have contributed largely to his future happiness — we deserve, and I believe will receive, his respect and patronage.

Diseases of the Peridental Membrane, Beginning at the Margin of the Gum.

By E. J. Perry, D. D. S., Chicago.

Importance of the Subject.

The importance of a thorough knowledge and a proper appreciation of the consequences of the diseases indicated in our subject can scarcely be overstated. We can no longer close our eyes to the fact that these diseases, in one form or another, are responsible for the loss of as many teeth as caries in all its forms. Our older text books have but little to say of them and no classification of them was attempted till quite recently. The best practitioners of a decade ago regarded the first operations in their treatment as menial. I remember almost the first work my preceptor set me to do was scaling tartar from the teeth and cleaning and polishing them; while now no operation in dentistry requires greater skill and thoroughness. In former days no medicament but an astringent was used in anything like a general way, while now no end to stimulants and antiseptics.

To Dr. Riggs, of Hartford, Conn., perhaps belongs as much credit for awakening an active interest in the subject as to any one of his time, and for many years these affections were classed under one general head without differentiation and called Riggs' disease. Dr. Riggs has left us no written statement of his work, but latterly the subject has been studied in all its bearings by some of our best minds, and in some hands very flattering results have been reached.

Classification.

Prof. Black has given us much on this subject, and his classification seems to me the best. Diseases of the peridental membrane having their beginnings at the margin of the gum in contradistinction to those beginning in the apical space are:

1st. Gingivitis.
2d. Calcic inflammation.
3d. Phagedenic Pericementitis.

It is not intended here to dwell at any length upon Gingivitis. By this term is meant those lighter forms of inflammation of the gingival margins of the gums, occurring from soft deposits upon the teeth or from constitutional causes.

Let us first, however, notice the structure and function of the parts. Dr. Black's description of them is as concise as any I have seen. What are known as the Gingivæ or Gingival margins of the gums, are those parts of the soft tissues that immediately surround the necks of the teeth, and are in conjunction with them, the free margin of the gum. The exposed surface or free margin of the gum is covered with a very dense squamous epithelium which fits snugly to withstand the severe abrading contact of food necessary in the act of mastication. This rests upon a layer of softer epithelial cells which covers a series of papillæ projected from the fibrous tissue beneath, the whole resting on the rim of the alveolus, and is drawn tightly around the neck of the tooth forming a sort of cushion to the tissues which it protects. It is also strongly attached to the neck of the tooth and the periosteum of the wall of the alveolus by radiating bundles of fibrous tissue that have become known as the dental ligament; that part of the gingival margin that lies in against the neck of the tooth is of different structure from its other parts. Here it is clothed with a soft, round, gland-like epithelium that suggest the formation of glands but fails to entirely assume the glandular structure, though it has been regarded as such by Serres. This which Dr. Black calls the *gingival organ* emits a profusion of small rounded cells, which are always found in the saliva, and are known as mucous-corpuscles. They can be had at any time for examination by passing a thin blade under the healthy free margin of the gum. These cells when mixed with the micro-organisms always present, make the bulk of those soft, cheesy masses which to the ordinary observer resembles pus, and some writers have regarded them as pus. They are, says Dr. Black, always found in these positions and must therefore, be considered normal. The question as to whether these cells or rings of cells found and described above, are glands, cannot be answered yet. If they are glands, they have a function. We have some facts bearing on the question, however. It is a well-known fact that some glands have the power of secreting (Black) and excreting certain poisons: thus eliminating them from the system, and this process may produce hyperæmia, or inflammation even.

It is known that mercury and iodide of potassium will produce inflammation of the gingivæ, and these cells are more abundant at the same time. Also, that if these cells are taken and submitted to chemical tests after the person has taken iodide of potassium they yield iodine—in fact, are tinged with it. We, therefore, have here an evidence that gingivitis may be produced by constitutional causes; or, as Prof. Black says, from poisons that circulate in the blood, and have an elective affinity for this gingival organ.

So, then, we can speak of *mercurial* gingivitis and the same produced by iodide of potassium, each constitutional gingivitis and usually called salivation, the salivary glands also being excited at the same time. This may run into pericementitis, and graver symptoms may appear, but the point of attack is always the gingivæ. Gingivitis may occur in young persons from local causes, a slighter form of inflammation, not destructive in character. This soon disappears if the patient adopts the vigorous use of the tooth brush, and stimulants, and antiseptics.

Gingivitis, simple, is not often considered grave enough to bring the patient to the dentist, but it may become a matter of some gravity, as it is often the starting point for a less transient inflammation. The tenderness of the gums, the disuse of the brush, and the teeth in masticating, favors, in a peculiar way, the deposit of salivary calculus, and the disease thus developes another element for its perpetuation. When this element enters into the case we term it calcic inflammation. The causes which induce these deposits may be constitutional, hereditary, or local, favored by the forms of the teeth, irregularities, by the neglected condition of the gums, as in simple gingivitis, lack of cleanliness, or disuse of the teeth.

Calcic inflammation is really one of the most grave of the diseases of the teeth, because of its insidious character and the great number of cases that occur, often destroying nearly the whole denture before it gives any warning.

Calcic inflammation, when dependent on the deposition of salivary calculus, is, if taken in reasonable time, easily treated by simply removing the cause, and with the free use of the teeth and brush the parts in most cases resume a state of health. But when a still further element enters into the case, viz., serumal tartar, it becomes more serious. Sanguinary or serumal tartar is deposited from the serum of the blood, as a result of the pathological condition of the gums, causing them to weep a serous fluid. If this serumal calculus was found only on the neck of the tooth we might more easily handle it, but it is so often found all along the root of the tooth, or at the apex of the root.

Dr. Black says he is of the opinion that it is determined by the irritation of the gingivæ. It differs from the other variety of calculus. It always appears under the free margin of the gum, and upon any tooth where the irritation which may have induced it occurs it is often in the form of thin dark scales, or nodules—very dense, and difficult to dislodge. Often, after the most thorough work possible, a close examination will disclose still more; whereas, salivary calculus is mostly found upon the lingual surfaces of the oral teeth below, and the buccal aspect of the superior molars, and never under the free margin of the gum. Salivary calculus will excite active inflammation, and the gum will recede as it encroaches upon it. But it will cleave off comparatively clean, in large scales, leaving the peridental membrane intact, and if no serumal calculus be present the gums will grow back firmly to the neck of the tooth, the parts resuming a normal state.

Often the salivary variety will be found in very large deposits. I have seen these deposits as large as the tooth itself. I have also observed that where the larger incrustations occur the serumal variety is not seen, and that the destructive process is not so dependent upon the amount as it is upon its distribution. Where it insinuates itself between the teeth, in the smaller scales, and is more dense, the injury is the greatest. But I have found that when not mixed with sanguinary calculus, thoroughness in its removal, which in this variety is possible, and astringents and antiseptics and brushes are used, the parts heal rapidly, although in aggravated cases a permanent recession of the gum will occur.

Serumal calculus is more destructive, not only to the pericementum but to the adjacent tissues. It is mostly found in conjunction with the salivary variety, but I have often seen it where it was alone. The gums are not so tender, and the destruction more gradual and less conspicuous, the peridental membrane becomes affected, is thickened, the gums yield pus upon pressure, and we feel to be in the presence of a grave disease. We know—I say we know, for we do—that if absolutely all the deposit is removed, in cases not too far advanced with the use of medicaments, the teeth can be restored to usefulness and health. It is the difficulty (insurmountable, shall I say?) of doing this first operation. Who can get it all off? The only evidence is a perfect cure. I can sometimes cure. I often use an antiseptic stimulant—Black's 1–2–3—(mild) first. The patient returns delighted after three or more treatments. I then remove with instruments the calculus, using the pushing force rather than pulling. The rationale of the treatment after the removal of the cause, is: We have here micro-organisms, hence antiseptics; a low grade of inflammation, hence stimulants.

Second only in importance is the patient's part. A few drops of the 1–2–3 on the brush daily, or a wash of cinnamon water. I use the Dunn syringe to inject the 1–2–3 after which I often inject peroxide of hydrogen, which leaves the sockets clean. It is well to use the peroxide first, also. A long line of antiseptics are used; also astringents and stimulants. Each have its advocates, but I apprehend that any of them used thoroughly is sufficient. We must modify our treatment of each case to suit the necessities as they arise.

It is to be expected that if the gum covers the root sufficiently to form an alveolus that the membrane will be restored to health, and the osseous tissue rebuilt. But it must be impressed upon the mind of the patient, that a reappearance of the trouble will occur if great care is not exercised.

By the term Phagedenic Pericementitis, is meant a peculiar, specific inflammation of the peridental membrane, and is expressive of its destructive character. Its chief pathognomonic sign is the occurrence of small, but deep pockets, at the sides of the roots of the teeth, which are filled with pus.

A great variety of causes are given for this disease. Some claim it to be due to mercurial impressions, and is hereditary, upon the assumption that our fore-fathers subsisted upon one form or another of this great remedy. Some call it catarrhal, induced by mouth breathing. Some say it is infectious. Others that its cause is constitutional. Some denote it as alveolitis. Each theory in regard to its etiology has able defenders. You have your choice.

You have also the disease to treat, and the man who can cure it, whatever be the cause, he is the one to whom I would listen.

The recognition of the pus pockets enables one to classify the disease. He is then certain it belongs to the phagedenic variety. Therefore to differentiate closely between calcic inflammation and phagedenic pericementitis, we discover that the flow of pus from the alveolus is insufficient, as we have this in both cases. The main symptom then in phagedenic pericementitis is the destruction of the fibers of the membrane, which for the most part run lengthwise the root. Hence pockets are formed which fill up with micro-organisms, pus, etc. The complaint has some peculiar characteristics not common to calcic inflammation, besides these pockets. It may affect a single tooth in an otherwise perfect set. I have under treatment now, such a case, the inferior sixth year molar being the only one in the entire denture which is attacked, the others remaining in a state of perfect health. The first indication of disease in this case was tenderness, a reddened tumefied gum, which upon pressure yielded pus. I passed a thin blade down the buccal aspect of the anterior root, and the lingual side of the posterior one. This lady of all others, I am favored with, is perhaps the most careful of her teeth. So I saw the disease early enough to perfect a cure. Yet to make it doubly sure, I examine it still once weekly. As yet the disease does not appear in any other tooth. A favorite point of attack is the palatine sides of the superior incisors; especially where these teeth are quite prominent. Dr. Patterson cites this fact to prove his catarrhal mouth breathing theory. I incline to the opinion that this is only a favorable point of attack, peculiar to certain conditions induced by the occlusion of the lower teeth. Aside from this, I do not know that any favoritism is shown the teeth. I have seen a single root affected where all the other tissues were perfectly normal. I have sometimes thought the disease infectious. I am therefore very careful to antisepticise my instruments. This disease does not seem to be dependent upon the presence of calculus. I have seen it, though rarely, where I could not find any calculus. Dr. Black believes the cause to be micro-organisms, because the remedies which cure, are the ones which destroy microbes.

My treatment of phagedenic pericementitis does not differ materially from the treatment I have just given for calcic inflammation. A thorough removal of all the calculus which is indispensible to success, followed by the use of antiseptic stimulants. I use the injection every fourth day. Where I cannot so cure a case, I have but little hope of the most extensive surgical operations. It is to be expected, however, that where the cementum is still vital, there will be a revivification of the pericementum, and rebuilding of the alveolar dental walls. The micro-organisms and their spores must be destroyed, and a condition of perfect asepticism maintained, not only of the points of attack, but the whole mouth. To do this requires the hearty co-operation of the patient.

TOOTH PRESERVING QUALITIES OF FILLING MATERIALS.*

BY DR. M. R. HARNED. ROCKFORD, ILL.

I do not want you for an instant to think that I have prepared for you a lengthy or in any way an exhaustive treatise upon this subject, for I have not had the time.

I have not been in practice long enough, nor have I been sufficiently observing, to give you an original paper upon the subject. I will simply undertake to give you a few observations combined with some ideas obtained by reading, that it may be possible you have not run across.

I am satisfied that tooth filling as usually practiced is very largely mechanical, the success of the operation depending upon the care in removing all infected portions of the tooth, and the skill of the operator in inserting a good mechanical plug.

Now for some cavities in some teeth this is the very best that can be done, in others it is the very worst.

Of all our filling materials *gold* is one of the most universal tooth preservers because the most universally used. It, however, possesses no tooth preserving qualities except as its ductility, malleability, cohesiveness, firmness and beauty makes it readily adaptable to the walls of the cavity, allows us to restore the natural shape of the tooth, stands attrition and please the patient. This is a great deal and if for no other reason than the last named must be our standard filling.

In its relation with tooth substance it is entirely neutral, it simply excludes foreign substances and thus saves the tooth.

In its relation with the pulp, if in close proximity, its conductability renders it impractical, except as the pulp is protected by some non-conducting substance.

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*Read before the Northern Illinois Dental Society, October, 1889.

As a filling material then it is especially adapted to saving teeth of good structure. It is not fit for filling teeth of very soft structure on account of the force required in manipulation, nor for cavities of decay that extend their decalcifying influence to the pulp.

Tin is probable the most compatible with tooth substance of any metal known to our use. To what this is due I cannot say unless it is on account of its non-conductibility. As a filling material it preserves the tooth, being even more readily adapted to the walls of the cavity than gold, but on account of its softness and dark appearance it is impractical at the present time, except as combined with gold or some other metal as in amalgams.

Amalgams, though unsightly, are adapted to saving just such teeth as gold is impractical for. This I believe to be due in part to the galvanic action caused by its combination of metals. Then its plastic condition at the time of insertion and its subsequent hardness and strength on setting, enables one to bridge over semi-decalcified portions of the tooth, overlying the pulp, saving them permanently and comfortably ; whereas if the tooth sustance that was decalcified had been all removed, an exposure and subsequent trouble with the pulp would have ensued.

There are many formulæ of alloys for amalgams, but the essential metals are silver, tin and copper, with small quantities of gold, zinc, platinum, etc.

Silver is the base of all standard alloys ; it regulates the setting by hastening it, it expands on setting, and by its combination, sulphuretted hydrogen with which it frequently comes in contact in most mouths, forms sulphate of silver, which forms a sort of an impenetrable coat over the surface of the cavity, saving the tooth, but discoloring it and making it unsightly.

Tin in an alloy reduces the conductibility, aids in amalgamation and helps to prevent discoloration.

Copper in an alloy favors setting and seems to make the filling compatible with tooth substance. I believe this to be due to the action of sulphuretted hydrogen upon it forming the sulphate of copper, which is deadly to all parasites, and seems to form a coating, an impenetrable coating, as combined with the tooth substance. It adds to the whiteness on amalgamation, but this is not permanent.

Now, I am much in favor of amalgam fillings where not conspicuous, in soft, or very badly decayed teeth, containing live and healthy, but nearly exposed pulps ; and *especially* in favor of amalgams containing copper.

As for *copper amalgam*, I have had but limited experience with it, but as far as I have used it have been much pleased with it, and think for some cavities it is an excellent filling, for while it turns very dark, it does not discolor the tooth badly, and it stops decay effectually.

Oxy-chloride fillings are practically worthless except for roots, or as temporary fillings over arsenical applications, and I have found that for the latter named cases, in most cases sandarac varnish and cotton is just as good.

Gutta-percha is a good temporary filling, and Dr. Flagg says, that, "Though they leak outrageously, he has seen them do good service in buccal cavities for twenty years."

It being a non-conductor it makes an excellent protection to thermal changes, under gold, for the pulp of a tooth. But under amalgam I have not found it so desirable, as there seems to be an incompatibility between the two. For a capping under amalgam I have found oxide of zinc and oil of cloves excellent. Gutta-percha is an excellent root filler and a good cavity liner.

Oxy-phosphates, are in many respects the best fillings that we have, as they are readily and comfortably inserted, and come the nearest to forming a chemical union with the walls of the tooth, stopping all decay by the cut off of the supply of oxygen. The greatest trouble is they are not permanent, and are very good conductors of heat and cold. There is one peculiarity that it is of almost certain death to the pulp if placed in anything like proximity to it, and it seems to mumify it, and yet I know that a great many use them in badly decayed teeth as temporary fillings to await developments. They might just about as well apply arsenic, for in almost all cases they would get the same result and save time and the confidence of the patient.

ODONTOMES.

By J. v. METNITZ, M. D., VIENNA, AUSTRIA.

[Translated from the *Oesterreichisch-Ungarischen Viertel-Jahrsschrift für Zahnheilkunde*, by Louis Ottofy, D. D. S., Chicago, Illinois.]

(*Continued from page 306.*)

III.

The malformations described in the two previous sections of this paper are interesting in a high degree, principally because the first formation occurred and developed in the lower maxilla of a very young person; while the second case is from a senile upper maxilla. This circumstance led to a desire to examine similar growths of persons between these extremes of age.

I select two cases, one from the private collection of Dr. Steinberger, and the other from the collection of the Society of Austrian Dentists, which were described by Prof. Wedl in his "Pathology of the Teeth" (pp. 119 and 120), as well as in the accompanying atlas (Fig. 39). These are most remarkable cases of odontome—formations.

An examination of these cases seemed necessary, principally for the want of histological illustrations, these are conspicuous by their absence from papers describing these tumors as well as from our literature in general. As these cases have been frequently and fully described, in repeating I confine myself to brief descriptions:

A.

A young lady 18 years of age, has suffered for six months constant and increasing pain on the right side of the inferior maxilla.

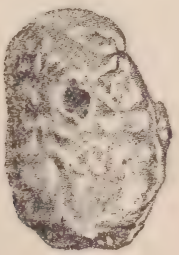


Fig. 11.

The posterior portion of the latter is thickened, and at first glance appears like the tumefaction due to difficult eruption of the third molar. The molars are all absent. The first molar was extracted a year ago, The opening of a small abscess was followed by the appearance of a yellow formation, which appeared roughened.

Dr. Steinberger removed a portion of the growth, which on examination proved to be dentine. The opening these made is still visible on the upper surface of the growth (Fig. 11).

Prof. Weinlechner extracted the odontome with some difficulty. It was so deeply imbedded in the bone that the alveolar borders were removed with the hammer and chisel. On the under surface of the odontome (Fig. 12) the impression of the crown of a molar is distinctly visible. This is of the third molar, which, lying under the second molar, in its growth and advance, pressing against the roots of the second molar, led to the malformation of its roots.

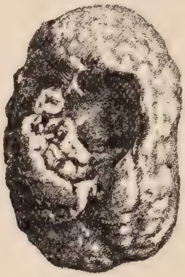


Fig. 12.

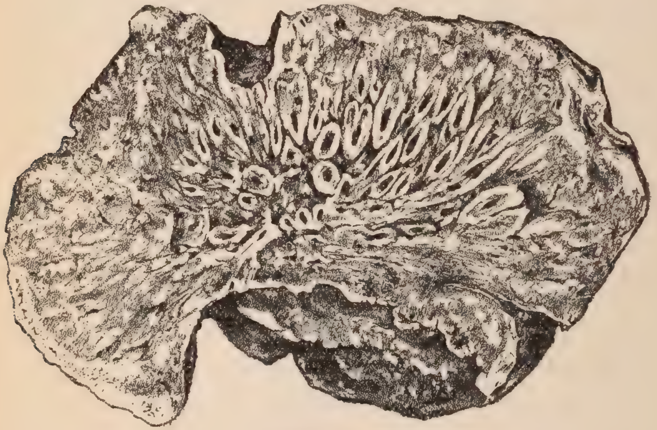


Fig. 13.

After the removal of the odontome the development of the third molar progressed without interruption. The magnified cross-section of the deformed tooth exhibits a conglomeration of systems of oval or circular shape, according to whether they were cut straight across or longitudinally. Between them there is either a very slight place, or they are so close together as to be in actual contact. Each of these surrounds a central mass.

If a portion of this deformed tooth is placed under a microscope, these oval and circular systems are generally isolated, each being an individual system. From a central point consisting of a mass of conglomerate structure, yet resembling globular masses, dentinal tubuli are radiating. The radiating lines of those dentinal systems are best seen in the cross-sections of the circles.

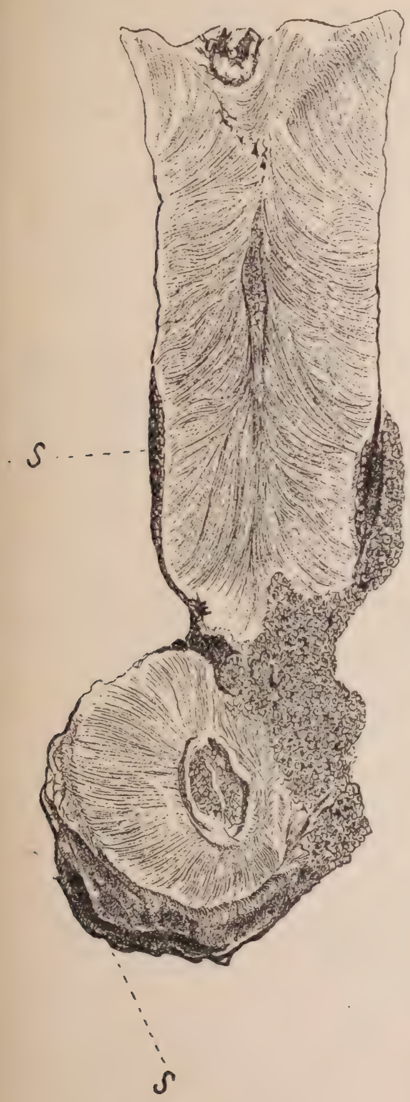


Fig. 14.

Between the dentinal systems in longitudinal spaces we find the portions of the pulp, partially colored, resembling blood. In other portions these dentinal systems are in direct contact, the irregular, ragged spaces between them being filled with globular masses.

The presence of enamel is especially marked at the base of the formation. It is found in layers on the periphery of the dentinal systems, but only for short distances. In the accompanying cut (Fig. 14) the enamel, *S*, is at once recognized. One of the dentinal systems is in cross-section, while the other is almost a longitudinal section. Between may be observed rich masses of dentinal globules. On the upper periphery of the odontome the cementum is recognized with a few, distinctly discernable bone cells. The dentinal systems which we have just described must be considered as secondary dentine, whose formation and development was due to irritation caused by its constriction. At a later period we shall find occasion to revert to this.

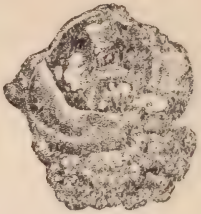


Fig. 15.

B.

We find much resemblance in regard to the manner of origin as well as the shape of the dental formation just described, and an odontome observed by Dr. Jarisch and described by Prof. Wedl.

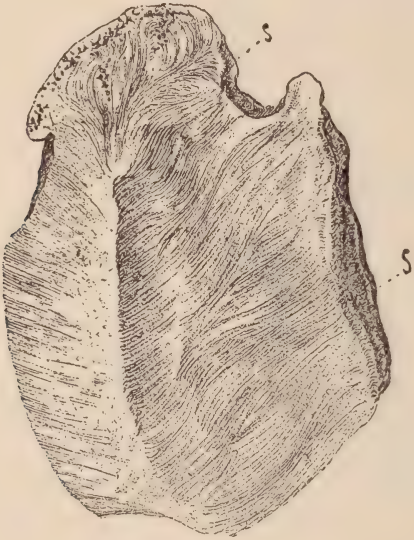


Fig. 16.

Originating from the malformed germ of the second molar, the growth also has a distinct impression of the third molar on its base

(Fig. 15). The upper surface of the odontome is more irregular than that described under "A;" it is also rich in longitudinal depressions, which extend into its substance.

On the surface of its base we find numerous beautiful enamel beads of various size. In the accompanying diagram they appear as white spots. The histological view of this malformation corresponds in its general aspect with the one previously described.

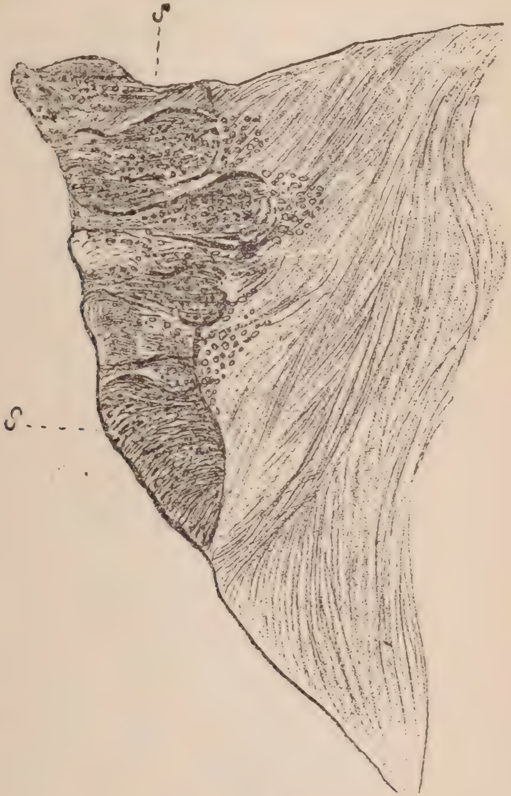


Fig. 17.

The large number of secondary dentine systems, which form of this odontome the greater part, were not distinctly circumscribed as in the previous case. The dentinal tubuli, which radiate from a general central point, are often crossed by the tubuli of adjoining systems. The marginal zone (Fig. 16) is not plainly delineated.

In this odontome we find indistinct inter-globular spaces, and tubuli which spread from central points like a bush; the central, undivided ends of these reach to the dentinal tubuli of the different systems.

The presence of enamel is discernable without the aid of the microscope, in the shape of distinct pearls on the basal portion, or that part corresponding with the root of the tooth. Thin layers of it are also found on the upper and lateral surfaces. The enamel is well developed, the prisms being fully formed. Enamel is also found in large united masses. In some places, as in Fig. 17, it sinks in lappel-shaped layers deep into the substance of the dentine. The lappels have a constricted portion of the neck, causing a resemblance to a pear. In that section penetrated by these enamel layers the dentine is divided into numberless dentine globules. The latter seems to penetrate into the enamel layers. Under a high power the layers of enamel are seen to be separated, and in the separations the dentine globules are imbedded.

On the upper surface there are thick layers of distinctly-formed bone and bone cells; their long irregular processes give them the appearance of spindles. The third and last dental tissue, the cementum, is, therefore, also represented.

(TO BE CONTINUED.)

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL ASSOCIATION.

(*Continued from page 649*).

Dr. P. T. Smith related a case of paroxysm of pain; every means of relief had been resorted to. There were no bad teeth or cavities. He found that the excision of the root of one tooth cured the ailment. Extreme care should be exercised in diagnosing these cases.

Dr. Brophy recommended cutting out the plate at those points where it is liable to impinge on the mental foramen.

A paper by Dr. C. B. Atkinson, of New York, was read by Dr. Wm. H. Atkinson on "Some Thoughts on Dental Literature." The essayist commended post-graduate courses as of much benefit to students. Believed the work of the National Association of Dental Faculties to be one of the most important and beneficial to the dental profession. He recommended that the course of study be made three years, and that the lecture course shall be at least six months in each year. Dental colleges should be made State institutions. There is need of an association of college faculties, which should meet at least twice a year, to discuss methods of teaching, etc. An independent dental journal ought to be published by a dental union. The unification of the profession by these means might lead to the conferring of a new degree, the M. D. D. S., being a combination of M. D. and D. D. S., and possibly independent congresses could then be made successful.

Dr. Louis Ottofy read the report of the section, giving the statistical information in regard to the number of dental colleges, graduates, etc. The section urged warmly the increase of the obligatory college terms from two to three years, and in this matter the Association of College Faculties, as will be seen by their action, fully concurred.

Dr. Louis Jack read a paper on "The Necessity for Independent Dental Journalism," asking the support of the profession to the *Independent Dental Journal*, and expressing the belief that free and uninfluenced dental journals are more powerful and capable of conferring greater benefits to the profession than other journals.

In the course of discussion, Dr. Barrett stated that it was the duty of the profession to support the dental journals. The American Dental Association places itself under the feet of a supply-house by having the latter publish its transactions. He believes in *good* journalism, not necessarily independent journalism.

Dr. Crouse stated that the Association had tried the experiment of publishing its own transactions, but did not succeed. As to the work of the association, he believed that the section work is not done in the manner in which it could be to yield the best results. The sections ought to present from year to year the concensus of all that is important and that transpires in the profession. It is not necessary that every section should report each year. Some may not need to report more than once in two or three years. He offered a resolution which was adopted, instructing Section II to formulate a plan of work for the various sections, and to present it at the next meeting of the association.

Dr. Barrett thought that this work is not that of one section, but of all the sections.

Drs. Shepard and Allport believed that a plan more satisfactory than the one under which the sections now operate, ought to be decided upon.

Dr. Ottofy stated that post-graduate education has assumed practical shape during the year, and that much benefit was promised to result from this new departure. An association of post-graduates had been organized, and we are justified in expecting much improvement and benefit from it.

A paper on "Oral Surgery and who should practice it," by Dr. M. G. Jenison, of Minneapolis, was read. The writer related a number of cases of erroneous diagnosis by medical men, of cases arising from dental lesions.

Dr. W. X. Sudduth, delivered a lecture, illustrated by photomicrographs, shown by being projected on the screen. The epithelium, development of the teeth, caries, etc., were copiously illustrated.

Dr. N. S. Hoff, presented the report of the section on operative dentistry.

Dr. Fillebrown's book on Operative Dentistry, was commended as also the last edition of Harris' Principles and Practice of Dentistry. He believed that the subject of immediate root filling was one requiring careful study, and its practice should be subject to the utmost vigilance. Recently cotton and carbolized cosmoline has been recommended as a root filling. The subject of porcelain inlays has attracted much attention, but the methods are as yet too crude to justify general adoption. The subject merits inquiry. Gold inlays have been also suggested, platinum being burnished to the shape of the cavity and molten gold having been poured into the platinum shell, the inlay is cemented into place. There is inactivity at present in regard to methods of filling, nothing especially new being done. A newly imported preparation, known as Nedden's Crystal Gold, has received some attention, but the ideal filling material has not yet been discovered. Many preparations of copper amalgam have been placed on the market, each is said to be the best ; time will tell of how much value this filling material is. The plastic craze of six or seven years ago, has not exerted a beneficial influence on the study of filling materials and their method of introduction. The subject of obtunding sensitive dentine is still prominently before the profession. No specially new or novel methods have been suggested during the year.

Dr. G. B. Watkins, of Detroit, exhibited a regulating appliance, and Dr. V. H. Jackson, of New York, showed his method of regulating by using No. 20 piano wire, several pieces being soldered together with tin, using muriatic acid as a flux.

Dr. G. L. Curtis, of Syracuse, N. Y., translated a letter on "Glass as a Filling Material," by Dr. Wm. Herbst, of Germany. He also exhibited specimens from Dr. Herbst. He takes the milk glass used for lamps and the brown glass from chloroform or cocaine bottles. The necessary adjuncts are a Bunsen burner, blow-pipe and soldering lamp. The glass should be pulverized, washed with water until free from impurities, it is then dried and put up in separate bottles ready for use. A porcelain or agate mortar should be used. If the mortar has been used for amalgam, it should first be washed with nitric acid. The cavity should be prepared in the usual manner and an impression of it is then taken. The color of the tooth to be filled should be compared with a suitable artificial tooth. A cast of the impression is made of plaster of paris and pumice, equal parts. The glass from two colors is mixed and melted in the cast with a Bunsen burner and blow-pipe. If the color is not suitable, glass is added from the white or brown and the mass is remelted. If a little powdered glass is sprinkled into the cavity in the model of plaster and pumice, it will leave the glass rough and the cement with which these fillings are fastened in the cavities will adhere to them more readily.

In the course of a discussion on root filling, following the reading of a paper on the subject—

Dr. Barrett spoke of the fact, that the pulp canal in the roots is frequently divided, and hence it is exceedingly difficult to fill that class of teeth in as satisfactory a manner as is desirable.

Dr. A. O. Hunt has also noted this fact frequently, having seen specimens in which the pulp canal passes through the side of the roof instead of the apex.

Dr. Harlan stated what he believed to be the correct method of filling a root when gutta-percha is used for that purpose. He always moistens the interior of the canal with eucalyptol prior to pumping in the liquid gutta-percha as that will facilitate its diffusion and filling the minute openings, etc. He does not *heat* gutta-percha cones.

Dr. H. J. McKellops believes gutta-percha to be the best known material for root filling ; does not believe the shrinkage for which it is so often condemned of any consequence. He is positive that small roots cannot be filled with anything else as satisfactorily.

Dr. White, of Georgia, uses a few hairs of cotton as a medium of carrying the semi-liquid gutta-percha to the apex of the root canal. Does not believe a small quantity of cotton to be of any consequence. He fills the apex with hickory points.

Dr. W. H. Morgan thinks single fanged roots are very simple to fill, but fine root canals cannot be filled with wood. He inclines to the belief that oxychloride of zinc is the best of root filling materials. He prefers a piece of metal for sealing the apex of the root canal. The entrance to the canals is generally too small and should be enlarged, as usually the canal is larger immediately beyond the entrance to it. Does not like gutta-percha because of its shrinkage.

Dr. J. Truman: We have no perfect filling material. The contents of the dentinal tubuli decompose, and the tooth becomes discolored. This fact should be taken into consideration. I use coagulants to coagulate and change the character of the contents of the tubuli. Chloride of zinc takes up the water and I fill the upper third of the canal with it.

Dr. McKellops claimed that in manipulating chloro-percha nearly all of the chloroform evaporates, and consequently the shrinkage so much talked about, amounts to nothing. He has seen gold fillings in roots for thirty-two years, and no discoloration has resulted. Does not believe that the oxychloride of zinc can be carried up into the root before it hardens, and consequently imperfect filling of the root is almost invariably the result.

Dr. J. D. Patterson stated that he does not use the base plate gutta-percha, but uses uncolored gutta-percha dissolved in chloroform. With this solution he endeavors to fill the apex of the root, while the remainder of the root canal is filled with oxychloride of zinc. He is of the opinion that the latter can be forced to the apex of the root before setting.

Dr. White, of Georgia, prefers wood points dipped in gutta-percha.

Dr. J. Taft objects to the term "apical space," which is so frequently heard. Apical foramen is the proper term to use. The dentists should determinate between different filling materials when operating on different patients. What may be suitable in one may be entirely unsuitable in another. The teeth of the young for instance are richer in water than the teeth of adults.

Dr. W. H. Dwinelle stated that the subject of root filling had interested him nearly fifty years ago, and he well remembers having seen Dr. Maynard, of Washington, D. C., use gold as a root filling. He believes in using gold for the filling of roots; the operation is more certain and the results more satisfactory.

Dr. Allport: The dentine is nourished by the pulp, after the latter is removed, the gases and contents of the dentinal tubuli are shut in and passing into the cementum are often the cause of pericemental inflammation. I dessicate the dentine by means of a root-dryer. The apex is then filled with oxychloride of zinc, and remainder of the root canal is thorougly cleansed with peroxide of hydrogen, the root canal is then dried and filled with the oxychloride of zinc, because of the latter's chemical effect.

Dr. Sudduth believes that it is entirely immaterial with which of the commonly used materials the root is filled, so long as it is in an entirely antiseptic condition.

Dr. Marshall: Do microbes live without oxygen?

Dr. Sudduth: No. If the outer chamber is closed, no microbes can enter from the mouth.

Dr. F. Y. Clark: If the apex of a root is ever so successfully filled with gold and the gold is removed in from six months to two years, an oder will be perceptible. If a portion of the dentine is taken out and placed in sterilized water, bacteria will be generated. When the root is filled, moisture as well as microbes remain in the dentine. The rubber dam should be applied, the canal cleansed and dried with hot air; it should then be disinfected with peroxide of hydrogen, carbolic acid or creosote, some of the agent used should be left in the root, and the latter should then be filled. The shapes and sizes of root canals differ and hence no one should confine himself to a single filling material. The wood fillings, under certain circumstance, and when the wood was previously dipped in carbolic acid, are good.

After the election of officers and the selection of the next place of meeting the Association adjourned.

CENTRAL ILLINOIS DENTAL SOCIETY.

The eighth annual gathering of the pioneers of the district societies of Illinois, occured at Peoria, October 8th and 9th, 1889. A meeting for "organization," at the National Hotel, on the evening of October 7th, saved much valuable time of the society. At this time the annual reports were read, which were encouraging, and among other things showed a full treasury.

The regular meetings being freed from routine business were full of interest from the start, and the attendance was good throughout. The President's Address brought out an unusually interesting discussion, as did also the report of the Committee on Dental Literature, by Dr. J. D. Moody. The paper of Dr. Fitch, on "Pulp Nodules," was accompanied by a number of specimens, most of which were rare, and all instructive. Dr. Sitherwood's paper on "Aluminum Plates, and how to make them," was also demonstrated by samples, and by plates in all stages of development.

The other essays were listened to with marked attention and will speak for themselves. The "Question Box" brought out animated discussion on the following subjects: Is bridging with filling admissible, and when? Best material for fastening pivots of crowns in root canals? Relative durability of fillings inserted by hand or mallet pressure? Is tobacco injurious to the teeth? Should a dentist use it, any way? Treatment of Cancrum Oris. Treatment of Hypertrophy of the Gums. What is the best pain obtundent?

Dr. C. R. Taylor, presented the following resolution which was unanimously adopted:

> *Resolved,* That unprofessional advertising by Dental Colleges for patients is disreputable, and demoralizing to the Dental Profession.

Dr. J. A. W. Davis was appointed a delegate to the Western Dental Society, and instructed to invite them to meet with us in joint session next year at such time and place as could be agreed upon.

The clinics were remarkable for the success attending each operation, and the absence of unfinished work.

A resolution expressing regret that Dr. W. A. Johnston, Secretary for the past five years of the society, had determined to locate in another State was unanimously adopted. He was chosen an Honorary Member of the society, and his sterling qualities both as dentist and citizen were commended to his new neighbors.

The officers for the ensuing year are as follows:

President, G. D. Sitherwood, Bloomington; Vice-President, J. W. Fisher, Bloomington; Secretary, E. K. Blair, Waverly; Treasurer, B. I. Pumpelly, Atlanta.

Executive Committee, C. R. Taylor, Streator; J. A. W. Davis, Galesburg, and J. T. Houston, Peoria.

SOUTHERN MINNESOTA DENTAL SOCIETY.

The seventh semi-annual meeting of the Southern Minnesota Dental Society, was held in Odd Fellows' Hall, Zumbrota, Minn., Oct. 15 and 16, 1889.

The Society was called to order by the president, Dr. H. L. Cruttenden, of Northfield.

Dr. C. W. Nutting of Spring Valley, read a paper on the "Care of the Deciduous Teeth." Discussion followed. Dr. C. H. Robinson, of Wabasha, furnished a paper which was read by the secretary.

In the evening, Hon. E. V. Canfield gave an address of welcome, which was responded to by Dr. C. W. Nutting.

Dr. C. H. Stearns was called to the chair, and the President, Dr. H. L. Cruttenden, gave his address. Dr. E. F. Clark, of Minneapolis, gave a paper upon "Bands and Band Crowns *vs* Large Gold Fillings," which was illustrated by drawings. Dr. W. J. Brady, of Minneapolis, then gave an illustrated paper, "A Study of Dental Tissues." The papers were well received, and discussed at length by Drs. C. M. Bailey, M. G. Jenison, E. F. Clark, W. J. Brady, of Minneapolis, and L. Bond, Anoka, C. W. Nutting, Spring Valley, C. H. Stearns, Zumbrota, L. P. Leonard, M. M. Davidson, Waseca, and others. The election to membership of Dr. J. E. Nutting, of Spring Valley, and Dr. G. V. I. Brown, of Duluth. And as Honorary Members, Dr. C. M. Bailey, and Dr. E. F. Clark, Minneapolis. Dr. D. W. Edwards, of Minneapolis, and Dr. D. F. McGraw, of San Jose, Cal., were transferred from active members to honorary members. Dr. C. M. Bailey, of Minneapolis, then gave a paper upon "Rubber and Vulcanizing." Dr. G. V. I. Brown, of Duluth, also gave a paper upon "Gold Inlays." Both papers were well discussed.

A vote of thanks was given to Dr. C. H. Stearns and the Odd Fellows' Society for hospitality.

The afternoon session was devoted to miscellaneous business, amendments to By-Laws, etc., and the election of officers for the ensuing six months, which resulted as follows: President, Dr. C. H. Stearns, Zumbrota; Vice-President, Dr. C. W. Nutting, Spring Valley; Secretary, Dr. H. L. Cruttenden, Northfield; Treasurer, Dr. G. V. I. Brown, Duluth. Executive Committee: Drs. M. M. Davidson, L. P. Leonard and W. C. Merrill. Membership Committee: Drs. L. Bond, E. K. Clements and J. W. Crigler.

Adjourned to meet in Waseca, Minn., the third Tuesday and Wednesday in April, 1890.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M. D., D. D. S.,

ASSOCIATE EDITORS:

J W. WASSALL, M. D., D. D. S. J. G. REID, D. D. S.
LOUIS OTTOFY, D. D. S. L. L. DAVIS, D. D. S.

THE ENGLISH DENTIST AND HIS SOCIAL STATUS.

On page 677 of the *Dental Cosmos* for September, 1889, Dr. J. Ward Hall of Shanghai, China, is reported to have said: "As to the social status of the dentist in England and India, it is well known that the English are a club-loving people, and the character of a man is determined to some extent by the clubs in which he holds membership. There is not in all India a dentist, nor does he believe there is one in England, who is a member of a first-class club, or who enjoys the social relations that a professional man should be entitled to. The cause is that his profession is looked upon with disfavor." We were present at Saratoga when the above speech was made. We are not sure after this lapse of time that the speaker was correctly reported; at any rate if he was correctly reported it is a mistake as regards the English professional dentist. On the evening of September 13, in company with another American dentist, the two of us were being entertained by an esteemed and well known English dentist at one of his clubs. Our entertainer had just received the September No. of the *Dental Cosmos*, and showed the above paragraph to us, each in his turn reading it in silence. Our presence as his guests at one of the best known London clubs was a sufficient answer to the incorrectness of the reported speech of Dr. Hall. We thought then as we think now that the speaker was incorrectly informed as to the social status of the English dentist on his native heath. It has been our pleasure on several occasions to be entertained at London clubs by English dentists and American dentists residing in London, who are also members of well known clubs. The fact of the matter is that there is scarcely an infirmary or hospital in Great Britain that does not have a post of dental surgeon which is filled by an English dentist. A dentist is a member of the medical council of Great Britain, at least one has been president of the British Medical Association, two, now living, have been knighted by the queen, and at least a dozen are fellows of the Royal Society, to say nothing of the other evidences of the social standing of English dentists. The truly professional English dentist is a man of liberal education, with the added advantage of a professional education in dental surgery, many times supplemented by the addition of the medical qualifications.

When we consider that the practice of dentistry is scarcely more than a hundred years old in England, we may be proud of the fact that her leading dentists rank alongside of the members of the parent profession—surgery, and are accorded social privileges alike to the practitioner of all branches of surgery and medicine.

THE FIRST DISTRICT DENTAL SOCIETY.

The First District Dental Society of New York will celebrate its twenty-first anniversary on January 14, 15, and 16th. The twenty-fifth anniversary meeting of the Chicago Dental Society in February last, was the most successful ever held in the West, and many of our eastern friends contributed thereto. We trust that a good delegation from the West will attend the coming meeting, and that this one may eclipse, if such is possible, the previous efforts of this famous society.

THE DENTAL REVIEW FOR 1890.

The year 1889 is fast closing, and the time is opportune for a renewal of subscriptions to dental journals. The DENTAL REVIEW, if not already on your list, offers itself for your favorable consideration. We need only remind our readers that this journal is one of the few devoting itself to the dissemination of original matter, and that the editorial pages are filled from month to month with articles discussing questions of gravest import as affecting the advancement of dental science.

DR. PATRICK.

Dr. J. J. R. Patrick, of Belleville, Illinois, was in Chicago as the guest of the Odontological Society, of Chicago, at the October meeting. Dr. Patrick delivered an address on the "First Permanent Molar." As his address was partly written and partly oral we are unable to present it to our readers at this time. For the first time in our hearing he gave a clear definition of the terms "exuviation," "succedaneous teeth," and "permanent teeth." He describes exuviation as the act of casting off, or shedding, it being analogous to the exuviation of the epithelium, or shedding of a coat of hair, etc. Succedaneous teeth are the ones which take the place of those exuviated or exfoliated. He states that the permanent teeth are to be considered as molars only. As some confusion exists regarding the above terms, we hope dentists generally will clearly understand what is meant when a speaker in a dental society makes use of them. Hereafter, according to Dr. Patrick, it will not be the correct thing to say, a "permanent central incisor," but a "succedaneous central incisor." At present we prefer the former term. We would like to hear from Dr. Patrick on the use of the above terms in a letter or otherwise, as would best suit him.

TREATMENT OF TEETH PRELIMINARY TO FILLING.

Several times lately we have removed oxychloride and oxyphosphate fillings from the labial and buccal surfaces of teeth for the purpose of replacing them with gold, porcelain inlays, etc. In most, if not all of the cases, we have noticed the general hardness of the margins of the cavities and the walls as well. In many of the cavities the primary object in filling was to protect the teeth until a more favorable opportunity for the insertion of a still more durable filling. Teeth so treated appear to be benefitted by this kind of preliminary treatment, even better than when gutta-percha is used as the temporary filling.

Cement fillings are not disturbed in the act of brushing. They are harder, and if properly protected until solidified, they do not leak. Gutta-percha on the contrary, if unskillfully handled, or if it is overheated, or is not properly packed until it is cold, does not so well and thoroughly fill the cavity as an oxychloride or other cement filling. The tooth does not appear to be so sensitive after a few month's wear of a cement filling as it is when gutta-percha is improperly used.

If more teeth were treated in this manner preliminary to permanent filling the dentist would get better results, and his client would be better served. Try it and report.

THE TENTH INTERNATIONAL MEDICAL CONGRESS, BERLIN, 1890.

The 10th International Medical Congress will be convened in Berlin, Germany, the 4th of August, 1890. There will be a section on dental and oral surgery. We have not received the preliminary announcement as yet, but from private letters and conversations with members of the profession in this and other cities of the United States, we are satisfied that a good many American dentists will be present in Berlin next summer. We hope to have the pleasure of announcing that our American brethren will furnish valuable contributions to the dental section, and that they will support the dental section with great unanimity. We were present at the Congress of 1881 and 1887, London and Washington. Both of the meetings were eminently successful in the number present, and it is our desire to chronicle a still larger gathering, with even greater success in the dental section than has heretofore been witnessed. We would urge upon our readers who contemplate becoming members of the Tenth International Medical Congress to begin the preparation of papers, the collection of models, drawings, etc., so that the United States will be worthily represented in this World's Congress. From time to time we will publish the latest news concerning the dental section obtainable up to the date of going to press.

FOREIGN CORRESPONDENCE.

HYPNOTISM IN DENTAL SURGERY.

To the Editor of the Dental Review:

DEAR SIR—In THE DENTAL REVIEW of September 15th, under the title of a "Peculiar Case," signed "Nemo," I find a description of a painless extraction of three molar teeth, for a lady who placed herself immediately before the operation was performed in a "particular" state. The author, asking an explanation of this condition, which he seems to attribute to spiritualism, has encouraged me to say a few words in regard to this case.

The peculiarity observed on his patient, by our professional brother; was certainly a clear case of auto-suggestion or self-hypnotism, spiritualism having nothing to do in this matter.

The patient placed herself in the hypnotic state just before the operation, at the time when she kept her eyes fixed for a few minutes on a certain part of the room, as indicated in the clear description given by the author.

It is a well recognized fact, by all those who have carefully studied the subject of hypnotism, that certain persons can hypnotize *themselves*, without the aid or presence of a second person.

The hypnotic state being obtained, insensibility of a certain part of the body can be easily produced, just by the verbal statement of the operator, who simply says: "This or that part has become insensible to pain." At this moment the operation can be performed painlessly.

In certain cases the patient, as soon as hypnotized, is in a general anæsthetic condition. This is what probably occurred with the patient of our confrère, "Nemo." If, however, she was not insensible, although hypnotized, she knowing in advance that when in that peculiar state the operated part would be insensible, the exclamation of the accompanying person, who cried out, "She is ready now," was quite sufficient to bring on insensibility of the parts. As to the fact of the person answering immediately when asked to rinse her mouth, although in this hypnotic condition, it still belongs to the field of the hypnotic state.

Our confrère, "Nemo," asks whether this peculiar state could not be employed for producing anæsthesia for our dental operation?

I have now studied this method for over seven years in general medical practice, but have only once employed it in our specialty, this being in a general hospital. I object to using this method in our office, on account of the general superstition still attached to this subject of hypnotism or magnetism by a majority of patients, who believe that one who occupies himself with hypnotism is endowed with a "supernatural power," rendering him capable of doing anything with a patient who places herself or himself into his hands. It is needless to say that this is an erroneous idea; yet, as in our specialty, we are most of the time alone in our office with a patient. I have preferred to keep on the safe side, and, to prevent any disagreeable allusions, I have always positively refused to employ hypnotic sleep in our office for a dental operation, although I am absolutely convinced that this method would be of the greatest value in our specialty, especially in painful or very long operations.

M. Godon, in a communication read before the Odontological Society of Paris, in May, 1888 (*Odontologie*, July, 1888), speaks on the use of hypnotism in dental surgery, mentioning the fact that this method was then being used at the Paris Dental School for the painless extraction of teeth. Mr. Godon also reported a case in which he used, on several occasions, mental suggestion on the same person for the purpose of excavating sensitive dentine on a highly nervous patient with complete success.

The only time I used this method in our specialty, as stated above, was in a military hospital of Paris, in 1882, on a soldier who was suffering severely from an exposed pulp in a superior bicuspid.

Before hypnotizing the patient I slightly touched the pulp with a needle. The way in which the patient expressed his delight in regard to my proceeding proved to me that the pulp was by far not a dead one. The man was then hypnotized. When he was placed in that condition I was able to touch the pulp, to pinch it, to tear it. I introduced a needle in the middle of its substance; it bled, but not the slightest indication of sensation could be denoted on the patient's countenance. He was then again restored to consciousness—to his normal state—and the needle was again introduced into the pulp canal. A formidable cry, accompanied by a good, solid profane word, was highly expressive of the variation of sensibility of our patient's pulp.

More could be said on this subject, but I fear I would take up the place of other, more interesting matter to the practitioner.

Very sincerely yours,

A. C. Hugenschmidt, M. D., D. D. S.

15 R. de la Paix, Paris, France.

REVIEWS AND ABSTRACTS.

Abstracts of Two Papers read before the First International Dental Congress, by A. C. Hugenschmidt, M. D., D. D. S., of Paris, France.

IMPLANTATION OF TEETH.

After having given the description of the operation, and mentioned the names of MM. Younger, Kirk, Ottolengui, Curtis, of the United States; Cunningham, of England, as being the promotors of this new process, he gives a history of seven cases which he performed, with two failures. After having thoroughly exposed the *modus operandi* of the method, insisting on antiseptic precautions, he concludes that immediate success is almost certain in every case, provided all antiseptic precautions have been taken. His two failures he attributes to an operative fault on his part; having made the new alveolus too large, which has allowed pathogenous micro-organism to develop freely between the tooth and bony surface.

He does not believes that the periosteum is at all necessary for the success of the operation, as all the teeth which he used have had the periosteum thoroughly removed from their surface. He has only used old teeth, some of them being much more than twenty-five years old.

The way in which the tooth is retained is explained as follows: The implanted tooth being thoroughly aseptic, will remain a perfect passive body in the process of bony formations, taking no part at all.

Considering the bone we have here, all the phenomenon of simple osteitis, the Haversian canals which have been opened by the trephine, will enlarge themselves by the development of the medulla contained in them, which will close up the slight space left between the tooth and the alveolus. This embryonal tissue will soon be replaced by projections from the bony surfaces which will gradually ossify, so that the tooth will be retained by the close adaptation of the new bone to the root of the tooth, and not by true anchylosis or amalgamation of the two bony surfaces in contact.

The result of the future depends entirely on the good state of the constitution of the patient. If the patient is a very healthy person the tooth will be retained indefinitely. If on the contrary the patient is subjected to occasional disturbances of health, the tooth will have a very limited time of existence; we all know that if such persons have a weak point in their organism, any interference with general nutrition will certainly manifest itself by striking on this weak point and produce a chronic inflammatory state; it is unquestionable that an implanted tooth in such an individual will prove to be, the "locus minoris resistentiæ" of his organism and we shall have an absorption of the root taking place.

On the other hand if the patient is a good healthy subject, when the process of retention of the tooth shall have been completed, the organism will dispose of this foreign body; as it does for example in gun-shot wounds of bones, where a rifle-ball is kept for twenty or thirty years in a bone and is only found on the post-mortem table; an encystment will take place, in this case a bony encystment or osseous sclerosis; the bone immediately in contact with the tooth, will become very rich in earthy salts at the expense of the organic materials which will be reduced to its minimum quantity. This will be a process of condensing osteitis, and the tooth will be retained indefinitely. Implantation will prove to be a very usefnl operation, provided it is performed on a patient with a good and strong constitution.

HERPES ZOSTER OF THE MOUTH AND GUMS.

Herpes Zoster of the mouth and gums presents itself as an acute circumscribed inflammatory disease, characterized by an eruption of vesicles of herpes on a red, inflamed basis; vesicles which are disposed in groups and follow the course of the adjacent nerve, this eruption is preceded and accompanied by a very severe neuralgia of the fifth nerve. The evolution of the disease can be divided into two periods: 1st, a period of invasion, 2d, a period of eruption.

The period of invasion lasts three days and is accompanied by a marked fever and other general symptoms; it precedes the eruption. There is also this very severe neuralgia of the whole fifth nerve. On the third day we have the period of eruption. The involved parts become excessively sensitive to pressure, and on the red mucous membrane can be seen a series of little groups of vesicles, the size of a millet seed. The neuralgia which up to now had involved the whole fifth nerve, became localized to the diseased region. This eruption lasts about three weeks to one month and the pain is persistent.

It is a rare affection; in a period of ten years only two cases have been observed. In the first one the eruption was situated on the inside of the right cheek and extended under the form of a ribbon parallel to the direction of the upper teeth; for the distance of an inch and a half in length, and half an inch broad.

In the second instance, the eruption was located on the right exernal region of the gums of the lower maxilla, beginning at the right inferior cuspid, extending as far as the second molar on the same side.

The affection is probably of infectious origin and is due to a neuritis of the affected region which brings on trophic changes. The treatment is a palliative one; cotton-wool placed between the cheek and teeth, to prevent friction, and on it can be placed an ointment containing cocaine and morphine.

EXTRACT FROM THE ANNUAL ADDRESS OF DR. D. M. CLAPP, BEFORE THE MASSACHUSETTS DENTAL SOCIETY.

And, now, what of *Dentistry?* If we stand again with the forefathers on Plymouth Rock and look backward, we shall see no footprints that have been made by this branch of science and art, although medicine and surgery are now three thousand years old. If we look forward, it will be way in the dim distance that the first shoot of this tree is seen. It is a mere leaf or twig, but as time goes on, it is found to be a plant of most rapid growth and of surprising reach of branch and bough.

We may well be proud of what has been achieved in but comparatively a few years by the dental profession. There are among the fourteen thousand dentists of this country as noble, as scientific and as learned men as can be found in any other profession or calling. But it is not of what we are, but of what we ought and may hope to be in the future that I wish to speak.

I have traced disjointedly the growth of our country. I have tried to set before you the wonderful age in which we live. I would raise your enthusiasm for the opportunities the times present. I would have you comprehend the fact that the teeming activity, the throbbing, pulsating current of the nation's life imposes individual responsibility. If we are to keep our profession up to the times, if we are to make it worthy the confidence and love of the people, if we are to become great, we must lay hold of our opportunities, and this can only be done by individual effort, sacrifice and devotion.

We must raise the standard. There are already enough dentists as good as we are. What we want is better ones. We must drum away at the schools and cause them to be more critical in their selection of students. They should let no man enter unless he has the brain to comprehend the requirements of the profession and the hand to execute its difficult and trying tasks.

The day for individual jealousies is past. There should be but one aim, and that, to be more competent and to assist one another on every occasion.

It is time that here, in this center of learning, a monument to our chosen work should be erected, or, at least, begun, for it should not be completed so long as there is left a dentist to bring to it his contribution or to need its help. We should have here a dental library and museum. The library should contain all the works ever published on dentistry, and as many on all its collateral science as possible. Any new work should be added as soon as published. As far as I know, there is, to-day, no such comprehensive dental library in existence. American dentists have taken the lead in advancing the standard of dentistry. Why shall they not take the lead in a movement so important as this, and by their energy and foresight establish an institution that shall be of untold value to us now and, in the future as it shall increase in scope and power, be to those who shall come after us, such a help that they will point with pride to it and say: "They who founded this library had the interests of dental art and science deep at heart; they sacrificed much, but could they know the value it is to us in these latter years they would be more than repaid for all their labors." Shall we not erect this monument here in the old Massachusetts Colony, and in sight of the old Beacon Hill?

The museum should contain instruments and appliances of every description, so arranged as to be easily seen and their merits understood. There should be specimens of everything calculated to instruct the student and the practitioner. The field is unlimited, and the good such an institution would accomplish immeasurable. Are there not fifty dentists in Massachusetts, are there not twenty-five, are there not ten—I will be one—who will give one hundred dollars each, to begin the foundation for this monument?

We are being recognized as professional men by physicians, lawyers, clergymen and the public, fully as fast as we deserve. It is not modest for us to seek such recognition. It will not change the facts for this society to resolve, or if all the dentists in Christendom should declare, that we are a profession. It is for us so to educate and conduct ourselves, that our work shall compel all to accord to us the honor of being a profession.

One of the first steps to lead up to this desired position is individual pride in our vocation. No amount of fault-finding with our fellows, with the schools, or with the times will serve to advance us one whit. We must come out from the seclusion of our offices with inquiring minds. We must come also open-handed, sowing broadcast what grain we have winnowed. We must elevate our thoughts while we are toiling for bread above the bread level. We must look into the past for our hope, and into the future for our inspiration. We must have untiring industry. We must be men! We must be up and doing!

Standing on the vantage ground of this year of grace, 1888, and looking forward into the future, I think I can see our profession still advancing. Its ranks are filling up with men more noble. Their brows are broader because they have greater intellect. Their hands are more tender and cunning because they have been taught with greater intelligence. Their achievements are marvellous because they have studied man's needs with a truer knowledge of the possibilites at hand for his relief. I see the people filled with respect for the dentist, for he has risen to the plane that merits it.

PAMPHLETS RECEIVED.

PROFESSIONAL ATMOSPHERE AND MORALS ; OR PATENTS AND SECRETS VS. A LIBERAL PROFESSION. By J. J. R. Patrick, D. D. S., Belleville, Ill. (Reprint from the *Archives of Dentistry.*)

PRACTICAL NOTES.

A CRITICISM OF DR. HEWITT'S REMARKS IN THE OCTOBER DENTAL REVIEW.

In writing an article on any subject that all are familiar with, more or less, one is very apt to write things that he does not mean or at least to convey ideas that he did not intend.

Consequently the following lines pertain more to the order of the different steps of an operation rather than to the method of accomplishing them. For instance, in an essay by Dr. A. C. Hewitt, of Chicago, in the DENTAL REVIEW, page 625, part III., in the October number, he described what the attention of the operative dentist is often called to, namely, teeth badly broken down, nerve canals filled with "rottenness and vile odors," in a mouth that is all but healthy. He asks "what is the operator to do?"

On page 627 he tells us, in giving a case under similar circumstances, after applying the rubber dam, opening and drying the pulp chamber, to thrust a piano wire bristle to the apex, not through it. Now I fail to (at this step of the treatment or perhaps at any other) see what good can come from such a course as this. No two things can occupy the same space at the same time, consequently some of the contents must be pushed beyond the apex, giving an excellent opportunity for one to study the different stages of inflammation. Having pushed the bristle to the apex he then describes his method of removing the bad effects.

I think that if he had first used his antiseptic treatment as described he would not so likely have his patient return with a sore and aching tooth. These remarks are written in all kindness toward the author of the above mentioned paper.

Cincinnati, O.
Respectfully yours,
CHAS. N. DANN.

IS ATMOSPHERIC PRESSURE A MYTH?

In the *Items of Interest* for September, Dr. C. H. Land, in an article on "The Scientific Adaptation of Artificial Dentures," declares that we are all mistaken in supposing that artificial dentures are supported in the mouths of our patients by atmospheric pressure, and pronounces the term "Atmospheric Denture" a misnomer, a delusion and a snare.

The first paragraph in the article referred to is this: "In the adjustment of full sets of teeth to the dental arch we should recognize that the main dependence for support is due directly to the adhesion of the saliva."

In further illustration of this idea the doctor cites the old experiment of lifting a stone by a piece of wet leather pressed carefully over it, but he does not say in this case that it is the adhesiveness of the water that enables us to lift the stone, yet we are left to infer as much; in no other way could he consider it a good illustration of his idea of dental plates supported by the adhesion of the saliva.

The statement that two surfaces brought into *absolute* contact at every point will be held together with a force of fifteen pounds to the square inch, is accepted as an established fact.

This is due to atmospheric pressure or the weight of a column of air one inch square. This pressure varies with the depth of the column; at the level of the sea it is fifteen pounds to the square inch, as we rise from that level it decreases in regular proportion to the height ascended. In this way, by the aid of the barometer, the æronaut measures his distance from the earth when sailing among the clouds.

The only difficulty in availing ourselves of the full force of this principle in sustaining artificial dentures, or for other purposes, is found in not perfectly excluding the air from between the surfaces in contact.

A piece of dry leather cannot be pressed on the surface of a stone so closely as to exclude the air, but when the leather is wet and softened, and just enough moisture is left to fill the pores and exclude the air, a stone of considerable weight may be lifted by a string attached to the center of the leather.

It may be asked how do we know that it is atmospheric pressure and not the adhesiveness of the water that maintains this contact between the leather and the stone. To one who is in doubt, we would suggest this experiment.

Hang the stone and leather, as joined, in the receiver of an air pump, exhaust the air as perfectly as possible, if the stone remains attached to the leather, it will prove that Dr. Land is right, but if the stone falls when the air pressure is removed the proof is absolute that atmospheric pressure is the force that produces the effect.

The dentist well knows that from various causes, unnecessary to enumerate here, he does not secure and maintain a perfect fit to the mouth, and various devices have been resorted to in order to compensate for this inaccuracy.

Air-chambers or vacuum-plates, as designed by Dr. C. H. Land and others, are merely substitutes for perfectly fitting plates. Still acting on this belief that atmospheric pressure is the force we must rely upon, and knowing that if the air can be perfectly excluded from even a small area the plate will be retained, the air chamber, so called, is formed, and patients do learn to more or less perfectly exhaust the air from it, and it is not uncommon to find plates almost wholly depending on this for support when there has been considerable absorption of the maxillary ridge.

That moderately deep mouths with somewhat prominent ridges retain the plates better than the extremely flat ones is true, as the force to remove them is directly downward and against the sustaining pressure. In very flat mouths there is but little to prevent a sliding or lateral motion which would be effected much easier.

If we had a great weight to move we should find it much easier to slide it over a wet surface than to lift it.

Dr. Land remarks that the tissues of the mouth are drawn into the vacuum so that it soon becomes useless. This is true, and in connection with this fact there are two things to be considered; first, that it is the pressure of the air that forces the tissue into the chamber, thereby proving that a vacuum has been established, and second, that by the time the tissues are forced into the vacuum the plate has settled to the mouth and there is a better fit over the whole surface and the vacuum is no longer needed. This will not occur unless sufficient time has been allowed for absorption before the impression is taken.

When we are able to make perfectly fitting plates, vacuum chambers will not be necessary and I think we will still have to rely upon atmospheric pressure rather than the adhesiveness of saliva. NEMO.

? ? ?

To the Editor of the Dental Review :

DEAR SIR : I should answer the query of C. H. D. in the September REVIEW, regarding the cause of tickling in the nose during dental operations, by saying that it is caused by fine particles of tooth substance, made either by the disc or bur, being drawn into, or deposited on the outside of the nose, when the particles are expelled from the cavity by the chip blower. My experience has taught me that tickling only occurs when the dam is on, and never at other times. Respectfully yours, G.

MEMORANDA.

Dr. R. W. Bailey, of Omaha, Neb., has been calling on his Chicago friends during the past month.

The late meeting of the Northern Illinois Dental Society was a successful one, viewed from any standpoint.

A French dentist has just been elected a member of the Chamber of Deputies—A Congressman in fact.

The German Imperial Ministry of the Interior has made a grant of $20,000 toward the expenses of the International Medical Congress, to be held in Berlin in 1890.

Dr. J. E. Cravens, of Indianapolis, will soon take up his residence in Paris, France, to become re-associated with Dr. Bogue, at 73 Boulevard Haussmann. Our best wishes attend him.

ALUMINUM OUTFIT.—An entirely new and complete outfit for making aluminum dentures may be had very cheap for cash by addressing L. M., care of H. D. Justi, 66 Madison street, Chicago.

An American dentist has just returned from a trip to Europe, during which he attended to the teeth of several royal families whose molars had been thrown out of gear through repeated encounters with Russian names.—*Ex.*

Dr. A. Berry, of Cincinnati, Ohio, one of the oldest practicing dentists of the Mississippi Valley, died in Boston, in October. Dr. Berry was one of the conspicuous figures of Cincinnati, and a most enthusiastic advocate of hygienic living in our ranks.

Dr. P. Ricord, an American born citizen, died recently in Paris, France, where he had resided for more than sixty years. Dr. Ricord was one of the famous surgeons of Paris, devoting his talents particularly to the treatment of venereal diseases.

To the Editor of the Dental Review :

DEAR SIR : A discrepancy exists in my letter, *re* meeting of the American Dental Association, of Europe. Dr. Patton, of Cologne, is President for the ensuing term, and Dr. Davenport, of Paris, is Vice-President. "78."

Dr. Crouse has issued another circular in regard to the Dental Protective Association of the United States. The information contained in it should be in the possession of every practitioner of dentistry. If any one has failed to receive a copy, Dr. Crouse, (2231 Prairie Ave., Chicago), will mail one on application.

NORTHERN ILLINOIS DENTAL SOCIETY.—The fourth annual meeting was held at Alton, Illinois, October 15–17, 1889. The following officers were elected : G. A. McMillen, Alton, president ; A. D. Penney, Chester, vice-president ; L. T. Phillips, Nashville, secretary, and R. H. Canine, East St. Louis, treasurer. Chester, Ill., was selected for the next meeting, to be held on the first Tuesday in September, 1890.

One of the lawyers for the defense, in the Cronin murder trial now in progress in this city, asked that the testimony of the dentist who identified the victim by certain peculiarities of the teeth, and the production of a model of the murdered man's mouth, be stricken from the records, because it was only his *opinion*, the dentist having failed to insert the model in the mouth of the body found, and thus decide by actual comparison. It is needless to add that the Judge overruled the exception.

M. Pourchet, the Secretary of the International Dental Congress, has issued a circular, requesting all participants in the Congress to forward at once, descriptions of the appliances exhibited, the clinics made by them, and also the titles of papers read (when they were incomplete at the time of handing them in), and the substance of remarks made by individual speakers, in order that they may be handed to the editors of the different sections. It is important that this be done at once. The address of the Secretary is, 24 Rue de la Chausse d' Antin, Paris.

BROOKLYN DENTAL SOCIETY.

At a regular meeting held October 28, 1889, it was *Resolved* that the Brooklyn Dental Society endorse the Dental Protective Association, and recommend its members to join said association at once. Yours respectfully,

LEWIS SHAW, *Cor. Sec.*

PRESCRIPTION FOR TRAMPS.

℞

Bark of Dog - - - -	℥ ij
Commercial Lead - - - -	ʒ vij

Sig. In pills. One every minute until disappearance.—*Life.*

OUR TEETH.

Six thousand copies of the Illinois State Dental Society's pamphlet, "Our Teeth," have been sold to dentists of the United States for distribution among their patients. They are sold at cost—viz., $1.40 per hundred. Five thousand are now being printed, and those ordering soon can be supplied at once.

Address orders, or requests for sample copy, to the Secretary, Garrett Newkirk, 34 Monroe Street, Chicago.

WESTERN ILLINOIS DENTAL SOCIETY.

The Fourth Annual Meeting was held at Bushnell, Ill., on October 22 and 23, 1889. The following named were elected officers of the Society for the ensuing year: Dr. E. M. Robbins, Carthage, President; Dr. D. E. Coulson, Galesburg, Vice-President; Dr. O. M. Daymude, Roseville, Secretary, and Dr. C. S Hewes, Quincy, Treasurer. Next October the Society will meet in joint session with the Central Illinois Dental Society at Galesburg, Ill.

THE WORLD'S FAIR.

Dr. W. W. Allport, the chairman of the committee to solicit subscriptions to the World's Fair, of 1892, reports that he has secured pledges from the dentists and dental dealers of Chicago of more than fourteen thousand dollars ($14,000.00). This is a very gratifying showing, and it means that all classes of citizens are interested in this great undertaking. If any dentist desires to take one or more shares of stock Dr. Allport will be pleased to hear from him, whether he resides in Chicago—Illinois, or the great Northwest.

NOTICE.

To the Dental Profession:

The First District Dental Society, of the State of New York, will hold its Twenty-First Anniversary in New York City, January 14th, 15th, and 16th, 1890. on which occasion every practicing dentist will be cordially invited. Special railroad and hotel rates will be made. Please note date of meeting, and make your appointments accordingly.

All communications should be addressed to the Executive Committee—W. W. Walker, Chairman, 67 West Ninth Street, New York City.

NORTHERN ILLINOIS DENTAL SOCIETY.

At the meeting held last month in Sterling, Ill., the attendance was not as large as last year at Freeport. This to some degree was due to a want of railroad convenience. With the exception of one essay and one clinic, both of which were omitted on good grounds, the programme was carried out as published. Thirty-nine dentists were in attendance, and five new active and three new corresponding members were enrolled. The following named officers were elected for the ensuing year: President, G. W. Dennis, LaSalle; Vice-President, E. H. Allen, Freeport; Secretary, T. W. Beckwith, Sterling; Treasurer, A. B. Elmer, Rochelle. Executive Committee — Chairman, M. L. Hanaford, Rockford; E. R. Warner, Morrison; E. J. Perry, Chicago. Committee on Appliances — A. E. Kennedy, Morrison.

The society adjourned to meet at Rockford the third Wednesday in October, 1890.

T. W. Beckwith, Sec'y.

THE NEBRASKA CITY CASE.

[We have been requested to notice this circular and for the information of the public we print it entire.—Ed.]

Dear Doctor: The dentists of the State being somewhat interested in what has come to be known as the Nebraska City case, we take this opportunity of informing you of the result of the case, and why it was not different.

In July last Geo. W. Schwartz was indicted for practicing dentistry in violation of State law. The committee of the State Dental Society did not commence the case, but finding it had been commenced, took charge of the prosecution. The case came to trial September 28, the defense being that Schwartz was a gradute of medicine and qualified by his diploma to practice dentistry. The court however held *that a physician's diploma did not authorize him to practice dentistry or dental surgery.* The defense further offered to prove that the defendant was a skilled workman in dentistry, that he operated in a manner that gave satisfaction to his patients, and that he did good work as a dentist. *All of which was ruled out by the court.*

The following points from the court's instructions to the jury will prove of interest.

If at the time of the passage of this act, the defendant was a resident of this State and a *bona fide* practitioner of dentistry or dental surgery, and within ninety days from its passage filed with the county clerk of the county where he resided an affidavit of the time he had practiced, that would be a compliance with the law, If at the time the defendant was a resident of this State and a *bona fide* practitioner of dentistry and did not within ninety days from the passage of the Act file the required affidavit as required by Section three of the Act, and afterward left this State and practiced in another State or states and returned again to this State, before he could lawfully enter upon the practice of dentistry in this State he must comply with the provisions of Section two of the Act, and file with the county clerk where he resides a sworn copy of his diploma.

If you find from the evidence that the defendant was a practicing dentist, without a diploma, in this State on July 1st, 1887, and failed to register as such in the county clerk's office as required by law, and afterward practiced dentistry or dental surgery in Otoe county, you will find him guilty, providing that you find further from the evidence that he failed to file a diploma or copy of the same from some reputable dental college or university.

The court instructs the jury that the element of intent does not enter into and form a part of the offense with which the defendant is charged, and if you find from the evidence that he has done the acts which make up the crime as defined in the court's instructions to you, you will find him guilty.

In spite of the fact that the rulings of the court excluded every particle of defense offered by the defendant, and that the instructions of the court were against the defendant, the jury after being out eighteen hours returned a verdict of not guilty. What the court thought of the verdict is shown by the unmerciful scoring Judge Field gave the jury in discharging them at the close of term. Among other things he said, "Gentlemen, I cannot refrain from saying something at this time. There have been four criminal cases of importance before this court during the term. The first was that of the dentist Schwartz, who admitted a violation of the law; yet the jury acquitted him, etc., etc."

The committee feel encouraged from this case to think that we can soon get one past the jury and into the supreme court, where the law and evidence rule and not sympathy. We have three or four cases all ready to commence as soon the profession signify that they will back us. Can you help?

G. E. Douglas, }
I. W. Funck, } *Committee.*
H. T. King, }

"TO WHOM IT MAY CONCERN."

PATENTS CONSIDERED IN RELATION TO THE PATENTEES AND THE PUBLIC.

Article 1, Section 8, of the Constitution of the United States says:

"Congress shall have power to promote the progress of science and all the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

The Patent Laws of 1790, 1793, 1836, 1861, and, others are, entitled, "Act to promote the useful arts."

Laws conferring upon individuals or corporations, special privileges or immunities, are made upon the theory that the general public, which is represented by the law-makers, is to be benefited. Substantially, the people say: "For a prospective gain to all, we will give you certain limited monopolies, and relieve you of some obligations to encourage you to employ your time in ways, and to undertake enterprises, which will be for the good to the people."

The term monopolies is not used here in any offensive sense, but in its literal meaning.

The individual asking for a patent which shall protect him in the sole use of his invention is not supposed to be acting in the interest of the public, but for his own financial advantage; neither does the law give him a patent because it helps the claimant to get rich, but, as we have seen, for other and public reasons.

Keeping the distinction plainly in view between the purpose of the people in granting patents, and that of the inventor in soliciting the grant, we shall see that certain considerations ought not to influence the decisions of the patent office.

First, the fact that the patents granted by the Commissioner may be revised by the courts should not be allowed to influence his decisions.

Often, apparently, this is not the case. Too often it seems plain that well-paid solicitors have succeeded in worrying the officials into favorable reports on the most trivial applications for inventions either worthless or requiring a great stretch of the imagination to find anything new, or any evidence of "effort, industry or genius" in them.

Such decisions in the patent office afford unscrupulous men an opportunity to hinder the business of other manufacturers, or extort royalties to which they have no moral right, although they may legally claim them.

Such patents act directly against the purpose for which the laws were made. Instead of developing science and art, the tendency of such is to discourage men who are working to develop something useful and practical; they feel that there is no security for their labor, and that until they have been through a long and expensive suit, or series of suits at law, they will not know whether the work of their brain is to be legally their own or that of some one who has, by the aid of a long purse, succeeded against right and justice.

With this view of the purpose of the laws for conferring patents, it ought not to be difficult to determine the conditions upon which they should be granted. First, in the language of the Constitution, "To promote the progress of science and all the useful arts."

This title is broad enough to cover the whole ground, and it is reiterated in some form in the title of every act creating or amending the patent laws.

The plain language of the patent laws of the United States is that the claimant should be the first and original inventor of the thing claimed, also that it should be the result of "effort, industry, or genius" in the claimant. When these conditions are complied with no one can reasonably object to the granting of a patent, and the purpose of the law "to promote the progress of science and all the useful arts," will be attained.

As an example of the class of patents that ought not to be granted take one that has been recently issued for the form of the gum of artificial teeth. The claim is for the corrugated appearance and marginal swell near the border of the gum.

This patent, it will be observed, is for a form of the artificial gum as connected with artificial teeth.

Now, the parties who obtained this patent claim to make the most perfect imitations of the natural teeth and gums, and therefore the claim in their patent is for something which is only a copy of a well known natural form, and not an invention, the result of an expenditure of "effort, industry, or genius," and therefore under the law clearly not patentable.

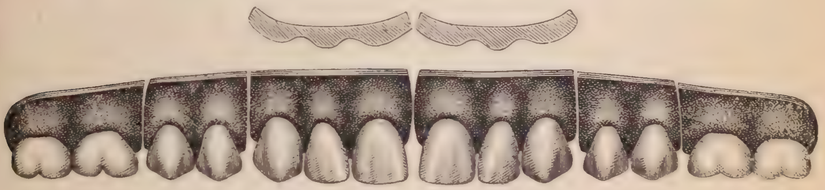
Again, suppose the form was patentable, the law requires that the claimant shall be the first and original inventor to entitle him to a patent.

In this case the patentees were not the first to copy this form, as shown by the cuts below.

These cuts are from samples taken from the stock of Mr. H. D. Justi, of Philadelphia, and clearly show that long before this patent he had not overlooked this peculiarity in the form of the gum, but had accurately modeled it in his own factory.

Cut No. 1 shows a form of teeth and gum made in the year 1864. Of these there were some dozen different moulds, varying in some points, but all having the same characteristic form of the gum.

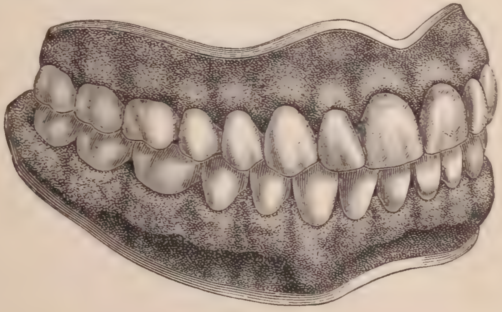
The sectional cut of the front block shows the corrugation.



No. 1.

Cut No. 2 represents a complete set of teeth, which with others of the same form was exhibited at the Centennial Exposition in Philadelphia, 1876.

It will be seen that the corrugated gum and the swell near the necks of the teeth are very strongly marked.



No. 2.

No. 3 is a set of upper teeth, made and exhibited at the same time as No. 2.

This cut more especially shows the swell near the necks of the teeth.

These cuts show beyond doubt that imitations of the natural forms of artificial gum, claimed as new in the patent, are not even original copies of nature.

No. 3.

To show where there is originality in this manufacture we quote from the report of the judges of the Centennial Exposition, 1876.

Referring to the state of the manufacture about the year 1855, they say:

"Then a rubber base was introduced, and from that time the entire dental business has been revolutionized. He (Mr. Justi) made a specialty at that time of supplying manufacturers with moulds of sectional teeth. There were the two modes of manufacturing these teeth, but neither worked to good advantage, one mode being that in which all the colors were put into the mould, and this resulted in bad colors of the gums, owing to the construction of the mould. By the other mode the blue and yellow colors were put into the mould first; then the material was taken out of the mould and carefully put into the first fire to undergo a slight degree of heat, called a 'biscuiting,' and the gum was next applied with a brush and then fused or burned ready for use. Seeing that in this latter mode there was room for improvement, he commenced to make experiments, and succeeded in constructing moulds suitable to the various formations of the jaws, *adopting curved lines in which he could sink any depth around the neck of the teeth* to receive the gum color, and temporizing the materials so that in one very easy operation he had the tooth ready to finish. The results created general admiration, the teeth being light in bulk, and remarkably lifelike in their appearance, the gums especially so. In order to distinguish this make of teeth from others, he adopted a trade-mark, accompanied with his name. *This mode of manufacturing artificial teeth has since been copied by all other manufacturers.*"

For these improvements, which rendered the present perfection of this manufacture possible, and which, as stated in the report, "were copied by all other manufacturers," Mr. Justi neither received nor asked any patents, but has always been willing that others should profit by following as nearly as they could in his footsteps, his own productions being so far in advance that imitations caused him neither fear nor jealousy.

In this connection there are a few points worthy of special consideration.

Patents should be granted under such conditions that the patentee will have some assurance that the rights nominally conveyed to him are really guaranteed by the authority of the United States.

Under the present construction of the laws, the patentee is only guaranteed the right to a law suit, and this is so well understood that the intending purchaser of a patent first of all institutes a careful and expensive search to ascertain whether there is any real value in it.

Another abuse of patent privileges in procuring patents and not manufacturing the thing patented. This dog-in-the-manger style is entirely contrary to the purpose for which patents are granted—that is, the public good.

A provision that if, after a reasonable time, the thing patented was not offered for sale the patent should be void, would remedy this evil and permit others to supply the desired article.

Valuable improvements are often locked up because manufacturers fear competition with their own productions.

The expediency of patent laws has been the subject of much discussion, but, without entering upon that question, I believe all will agree that there should be radical improvement in their administration.

VERITAS.

A PHARMACEUTICAL SPECIALTY FOR DENTISTS.

LISTERINE.

FORMULA.—Listerine is the essential antiseptic constituent of Thyme, Eucalyptus, Baptisia, Gaultheria and Mentha Arvensis, in combination. Each fluid drachm also contains two grains of refined and purified Benzo-boracic Acid.

DOSE.—Internally: One teaspoonful three or more times a day (as indicated), either full strength or diluted with water, or in combination with other drugs. As a local application to ulcers, wounds and abscesses, or as a gargle, mouth-wash, inhalant or injection, it can be used ad libitum, diluted as necessary for varied conditions.

Antiseptic, Prophylactic, Deodorant, Non-Toxic, Non-Irritant, Non-Escharotic, Absolutely Safe, Agreeable, Scientific, and Strictly Professional.

LISTERINE is a well-proven antiseptic agent — an antizymotic — especially adapted to internal use and to make and maintain surgical cleanliness — asepsis — in the treatment of all parts of the human body, whether by spray, irrigation, atomization, or simple local application, and therefore characterized by its particular adaptability to the field of preventive medicine — individual prophylaxis,

AND THE REQUIREMENTS OF GENERAL

DENTAL ✣ PRACTICE

LISTERINE IS A

Perfect Tooth and Mouth Wash,

NON-SECRET AND PROFESSIONAL,

And therefore has received the Highest Recognition as the Best General Antiseptic for

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MICROSCOPIC OBSERVATIONS, showing the comparative value and availability of various Antiseptics in the treatment of Diseases of the Oral Cavity, by W. D. Miller, A. B., Ph. D., D. D. S., Prof. of Operative and Clinical Dentistry, University of Berlin, from whose deductions LISTERINE appears to be the most acceptable prophylactic for the care and preservation of the teeth.

LAMBERT PHARMACAL COMPANY,

314 N. Main St. *ST. LOUIS, MO.*

THE
DENTAL REVIEW.

VOL. III. CHICAGO, DECEMBER 15, 1889. No. 12.

ORIGINAL COMMUNICATIONS.

ODONTOMES.

BY J. v. METNITZ, M. D., VIENNA, AUSTRIA.

[Translated from the *Oesterreichisch-Ungarischen Viertel-Jahrsschrift f ahnheilkunde*, by Louis Ottofy, D. D. S., Chicago, Illinois.]

(*Concluded from page 710*).

IV.

An interesting case of Odontome presented itself for observation at the surgical clinic of Professor Albert, in September, 1888. It was removed by clinical assistant, Dr. Hochenegg, who kindly presented it to me for examination.

The patient, B. L., a twelve-year old boy, was born at Magyar-Brod, Moravia. A year ago he lost two teeth from the left side of the lower maxilla, not suffering any pain however. In three months there appeared a swelling on the alveolar border, whence the teeth had been lost, this growth continued to enlarge until it attained its present size. The patient suffered no special discomfort during the continuance of the growth.

On examination we find, on the left side below, in the location corresponding with the position of the cuspid to the first molar, on the alveolar ridge, a tumor about the size of a cherry. It is covered with normally colored and immobile mucous membrane. Upward the growth extends to the cutting edges of the adjoining teeth. Toward the tongue and cheek, the tumor extends about one-half centimeter. It is immovable on the alveolar ridge and seems as hard as bone. The left cuspid and first bicuspid are missing, all the other teeth are normal and present.

Under the border of the lower jaw, on the left side, a digital examination reveals the presence of a gland about the size of two or three peas; it is round, fairly dense, smooth, and on pressure painful. Under the border of the jaw on the right side a few very small glands can be felt. In other respects the boy is normally developed, thin and pale.

On the 4th of September, Dr. Hochenegg operated on the boy. Under chloroform narcosis he made an incision through the mucous membrane, covering the posterior periphery of the tumor. With an elevator the tumor was lifted from its position. In so doing the adjoining bicuspid, which lay in immediate contact with the distal portion of the tumor, and the cuspid which was under the tumor, were both brought away. The bicuspid was attached by tissues to the tumor and in the removal of the latter remained connected with it. In the bottom of the cavity, after the tumor was removed, the cuspid was found lying loose. As it was impossible to expect the latter to become firm, it also was removed.

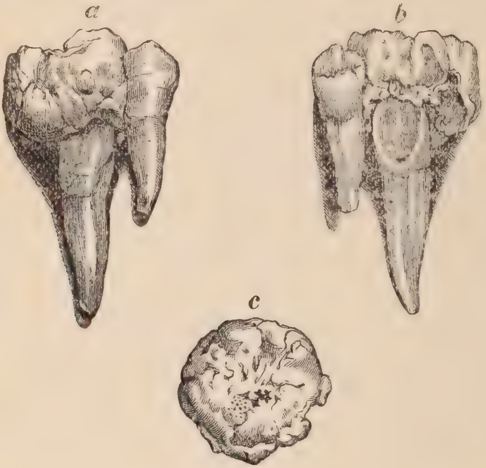

FIG. 18.

The cavity was now filled with iodoform-gauze. After the operation no fever ensued, and the patient was sent to his home cured.

The tumor is in size that of a medium cherry. The longitudinal diameter, that is the mesio-distal, is 15 mm., the transverse diameter, or the labio-lingual, is 14 mm. In its moist condition it weighed 3 grms. In color it is light, slightly yellow; in consistence apparently dense; on tapping it with a steel instrument a high, clear tone is emitted, much resembling that emitted by a tooth when similarly treated. The tumor seems flattened, as though pressed from above downward. The upper surface, (Fig. 18 *c*,) is flat, convex, and is composed of small, shiny and of large cusps, which in some places are perforated like a sieve. The greater part of the lateral surfaces retains this appearance, and is markedly convex, the convexity diminishing near the lower border, while on the posterior surface of the tumor, we find a longitudinal flat and smooth furrow. In this the bicuspid was found in contact for the entire length of its crown (Fig. 18 *a*).

On the inferior surface of the tumor we find a groove extending in a mesio-distal direction, containing a perfect impression of the crown of the cuspid. Its borders are distinctly outlined by sharp borders and projections. In the bottom of this impression a number of small openings may be seen; these lead into the interior of the tumor. In this groove, then, the crown of the cuspid was imbedded (see Fig, 18 *b*). The remainder of the basal surface is white, shiny and smooth.

The upper and labial surface of the tumor was covered with mucous membrane, which was removed with difficulty. Connective tissue covered the convex portion; it was firmly attached and bridged over the hollow depressions and grooves of the uneven ex-

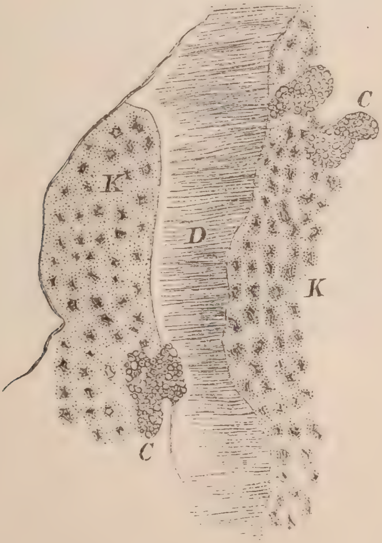

Fig. 19.

terior. With the exception of the obstruction caused by a few hard portions, the tumor offers no marked resistance to the knife. On the polished surfaces revealed by the incision, the bony substance seems to be made up of dense bone-resembling substance, which is perforated in the center and toward the base by numerous canals of various caliber. Especially on the lowest portion, the wide canals for the passage of vessels to the interior are quite distinct.

Microscopically, we find the presence of a bony substance which is changeable in density, but is more dense in the upper than the lower portion. In the latter parts we find masses of dentine (Fig. 19 D.) and around it masses of globular substance (C.) are seen. Many of these masses of dentine globules are entirely surrounded by bone and hence isolated. In the interior of the tumor the bone is fully organized. Haversian canals with their attending systems of lamellæ (Fig. 20) are found in this portion.

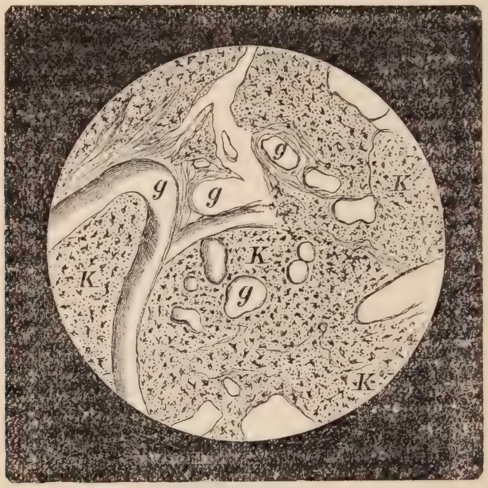

Fig. 20.

RESUMÉ.

We will now cast a retrospective glance over the dental malformations described in the various published portions of this series of papers, and endeavor to ascertain the causes which led to their formation, as well as the method of their origin and formation.

The most important sections of odontogenesis are still shrouded in mystery and hence the processes of the formation of the dental germ correspondingly difficult of comprehension. In regard to the best understood processes, we can only express our opinion.

The causes for the origin of a dental anomaly may be looked for:

First in a want of space. This want of space may be due (*a*) to the lack of development of the maxillary bone, and (*b*) to an excess of the normal number of teeth, hence the appearance of supernumeraries.

Second. The abnormal position of the neighboring teeth may be the prime obstruction to the development of a tooth.

Third. Processes of inflammation are the cause of the most varied malformations. We have in view inflammatory processes which are not confined to the interior of the pulp-chamber. Those originating from the inflammations of the periosteum take years to develop, and hence are found only in persons of advanced age.

Dental anomalies may occur at any age and in any part of the maxillary region.

Cases I and IV which are those of young persons are remarkable for their resemblance to each other.

Had we not found in Case I numerous globular masses and in Case IV developed dentine, and hence had we not been confident that we were dealing with malformed dental germs, the presence of swelling, the appearance of compact and organized bone, would have justified us in a diagnosis of bone enlargement.

The tissues which make up a dental germ, are remarkably lacking in density, while the germ is still entirely surrounded by bone. The crown, so far as the shape is concerned may be fully developed, and yet the formation of the root has not commenced. Should the latter meet with any obstruction, more or less of an unfavorable impression will be exerted on the dental germ.

It is not always the development of the root which is interrupted, influence may be exerted on the crown. In Cases I and II there was no marked interference with the development of the root. In my case (I) this was due to the youth of the patient, while in Mühlböck's case (II) it was due to the soft tuberosity and a possibility of the expansion extending into the Antrum of Highmore.

In other cases, (III A and B) on the contrary, the development of the root was interfered with. Hence we meet with a different arrangement of grouping of the constituents of the dental sac. That considerable irritation of the dental pulp was the result of a want of room in these two cases, is well illustrated by the presence of large masses of dentine. The periphery of the pulp, as is well known, is covered by cylindrical cells which become calcified and form the dentine. A long continued irritation of this layer of dentine cells results in their inversion (Heider, Wedl), and according to the length of time that the irritation continues and according to its severity the dentine nodules formed are more or less numerous. These have been designated (Virchow) as internal odontomes. The pulp becomes reduced and is divided by them, parts of it becoming calcified while other parts will still continue to retain their vascular connections.

The enamel organ is entirely divided. The calcification of the enamel cells, many of the latter most probably having been destroyed is interrupted, and the completion of entire enamel prisms is not accomplished (Wedl).

The formation of the cementum stops before it is quite developed. The fact that we find bone cells on the upper periphery is especially instructive. It leads to a contemplation of the possible osseous origin of Nasmyth's membrane. Wedl and Tomes are of the opinion that this membrane is a continuation of the cementum, hence rudimentary bone substance. In many of the mammalians the cementum covers the entire crown, we observe that in many of the herbivora, as for instance in the elephant, and also in the walrus and others, the layers are quite thick. While in the quadrumana and the carnivorous animals which live on land, we find the membrana eboris.

But the cementum may be well developed even in the case of an anomaly, as we saw in Case II. The history of the case has shown that chronic inflammation of the pericementum had existed. The pericementum is a part of the dental sac. Like the periosteum of bone, it is essential to the development of cementum at a more advanced age of these tissues.

While in this case (II) numerous dentine nodules were formed in the pulp cavity and the pulp was becoming obliterated, at the same time the layer of cement became thicker. We observe the layer-like formation of dentine and cement, as well as of the enamel, a process which is so beautiful in the constantly growing teeth of the rodents. The dentine is formed from the pulp and the cementum from the periosteum of the alveolus.

In this pathological case (II) we meet with a tissue which on casual examination, might be taken for rudimentary dentine or even for cementum. According to Kölliker, cementum, bone and dentine are often quite similar. This may happen when the latter has numerous Haversian canals, and as Retzius believes to have found it, to contain bone cells. Then again, bone may resemble dentine if it contains either lacunæ of considerable length having a number of canaliculi and is also provided with tubules, or when in addition to a few lacunæ there are a number of parallel canals, resembling dentine tubules.

This odontome (II) had its origin in the root-portion of a molar. It is therefore a root odontome. In view of its composition it must be considered an osteo-odontome.

A Study of Dental Tissues.*

By W. J. Brady, D. D. S., Minneapolis, Minn.

We sometimes become so absorbed in our work upon the human teeth that we forget that there are other forms of the dental tissues that invite our study, and which would aid us in solving many questions concerning our own teeth if we were only more familiar with them. Dental tissue does not always mean enamel, dentine, or cementum, or at least does not mean these in the form in which we have to deal with them in daily practice.

Strictly speaking, dental tissues are those tissues which directly compose part of a tooth, which does not include those other tissues which are sometimes made to do the service of teeth, yet cannot really be called teeth. However, we will take a little broader meaning of the term, and will consider at least a few of those closely allied tissues. One of the noticeable cases where another tissue takes the place of teeth is in the turtle. Here the jaws contain no teeth, but are covered with horny plates which do service in the limited mastication required. Also in whalebone, another tissue has become modified to assist in the work usually done by the teeth.

These tissues, though not exactly alike, yet are both modifications of the skin. They are closely allied to hair, and their development and structure more closely relates to that tissue than to tooth tissue. Most animals, however, even though low down in the scale of being are supplied with true teeth. As soon as we begin to study the dental tissues proper we find that not all teeth contain the same number and kind of tissues, and in many cases a certain tissue is so modified that we hardly recognize it. This leads us to consider just how many dental tissues have been established, and which is subject to variation, if any at all. The dental tissues proper are enamel, dentine, cementum, pulp, and peridental membrane. Nasmyth's membrane is so unimportant that we will leave it out.

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*Read before the Southern Minnesota Dental Society, 1889.

Enamel is the simplest of the dental tissues in structure and development, and the least constant in its appearance as part of the tooth. The variations in structure in enamel are not sufficient to establish more than one kind of enamel. Enamel wherever found is always quite hard and more or less brittle. So far as can be determined, it is always developed from a special organ—the enamel organ—by special cells, the ameloblasts. Enamel is always irregularly prismatic in structure, being made up of several layers of prisms or rods, which vary in the direction they pursue from straight to oblique lines or even wavy in appearance. Enamel varies in amount from a mere tip on a tooth to covering the entire crown. In many of the fishes that live upon other fishes, and in poisonous snakes, the teeth or poison fangs are tipped with enamel, thus rendering them very sharp, and quite suitable for piercing or holding the slippery prey. There has been much discussion whether or not enamel receives or is capable of receiving any nutriment after it is once formed.

Every shade of opinion and theory has been advanced, from Heitzman, who claims that it is traversed by a minute reticulum, carrying nutriment to all its parts, to Sudduth and others, who claim that when the lime salts forming enamel are deposited, they become crystalline in character, and that enamel is in reality a combination af minute crystals, and as incapable of receiving nourishment as rock itself. It is not the purpose of this paper to decide the case, but the last claim seems to have the most proof.

Cementum is the tissue next simplest in structure, being only modified bone. It is a little firmer than ordinary bone, and quite the same in structure. There is but one kind of cementum, from anything that we can judge by its structure. It does not always form part of the tooth, being present only in those teeth which are provided with sockets. Its development has caused considerable discussion, but it seems to be settled that it is developed the same as bone by that special modification of the alveolar periosteum known as the peridental membrane. Cementum seems to form a connecting tissue by which the alveolar tissue can grasp and retain the more hard and dense dentine beyond. Dentine is always found in some form in every tooth, and in some of the lower orders of teeth comprises the only tissue found. It varies in structure and density, from the coarse and soft osteo-dentine of the shark to the very complex and dense ivory of the elephant or hippopotamus. Dentine is divided into four classes :—osteo-dentine, vaso-dentine, hard dentine and plici-dentine. Osteo-dentine is so called from its resemblance to bone. In this class there is little or no regularity of structure, the nutrient vessels and other tissues finding their way through the meshes of hard tissue as best they can. Such dentine is found in the teeth of most sharks, and also in the teeth of the common pike or pickerel. Very little is known of the develment of this kind of dentine.

Vaso-dentine is so called from being vascular, or having definite vessels in its body. There is usually a central mass corresponding to the pulp, from which vessels proceed through the hard tissue. It is usually combined with a low grade of hard dentine. Though this is a step higher in the scale, no more is known of its development than osteo-dentine. Hard dentine forms the largest per cent of all the kinds of dentine. It varies much in structure, though it all contains the characteristic of having a central pulp from which fibrils radiate to all parts of the dentine. These fibrils are elongations or processes of the formative cells of the dentine—the odontoblasts—which form the outer layer of the pulp and by whose action lime salts are extracted from the blood supply and built up in the form of the tooth.

The dentine is thus built up in an open or reticulate form, varying much in density in different teeth. The openings or tubules left in the body of the dentine as it is developed, are only large enough to accommodate a small fiber from the cell, which fiber is an elongated process of the odontoblast, thrown out and elongated and narrowing as the cell recedes from its original position. The development of hard dentine has given a large field for discussion, and some of the same points concerning nutrition of the formed dentine are similar to the same points concerning enamel, and have received attention from the same men, but they do not appear to have settled the matter at all, and whether or not formed dentine receives or can receive nutrition is a question to be answered in the future.

Plici-dentine is only a more complex form of hard dentine, and is rare. It differs from the ordinary only, that the pulp is so folded or plicated as to form in some instances two or more distinct channels or bodies.

The pulp is a dental tissue very complex in its organization from the fact that it contains a number of special cells whose entire character is not yet settled. These special cells—the odontoblasts—are definitely known to exist only in such pulps as are associated with hard dentine. It is conceded that their first and main office is to form dentine, but aside from this, questions arise as to their exact character. By some they are considered nerve cells as well as tooth builders. Other microscopists dispute this point, and so the war goes merrily on, and patients suffer through the odontoblasts from dull excavators or heated burs just the same. Pulps vary in their action in depositing dentine, some continually forming it, giving rise to teeth of continuous growth. Such pulps are called persistent pulps, and are to be found in the incisors of the elephant, and in all rodents or gnawing animals. In our own teeth it has been decided that the pulp is not essential to their usefulness after the tooth is once formed. This seems to be the case in the instance of the elephant, in whose huge molar teeth the pulp is almost obliterated by entirely natural means as the tooth is formed.

The peridental membrane is last to receive our attention, and about this tissue there is as much doubt and discussion as about the nervous elements of the odontoblasts. It is advocated by Ingersoll that this is a double membrane, but this theory is not supported by later investigations. All seem to agree that it is a special modification of the alveolar periosteum, producing in some way the bone of the socket on one side, and cementum on the other. It certainly is more than ordinary periosteum, but its exact character in all those respects will yet give histologists a chance to waste tons of argument and barrels of "wind."

In conclusion let me say that examinations of all kinds of dental tissues are necessary to a complete understanding of our own, and that we give too little time to the study of such things. The purpose of this paper is to direct your attention to this field rather than to attempt to show all it contains, and though the paper is rather general in the treatment of the subject, yet I hope you will be entertained if not benefited by this study of dental tissue.

THE FUTURE OF DENTISTRY.

I.

RETROSPECTIVE.

MR. EDITOR: For a period of not less than a quarter of a centuary I have been a practicing dentist in a large city, and during that time I have seen many changes in the *personnel* of my profession and in the methods of practice. I have been an observer of men and a frequent attendant on dental society meetings. Included in this period dental legislation has become firmly implanted on American soil. It appears to me that we are now passing through troublous times which only the future will definitely and finally settle. When I began the study of dentistry, my teachers were men engaged in practice solely for their own benefit—having only such regard for their patients as would not work them (the teachers) business harm. Having such guides and directors of my early beginnings, as did not give me a high idea of my life-work, it is not surprising that my own aims were low. I was taught in the office to use the hand mallet for their special benefit, to sweep and care for the office and watch the vulcanizer. After a time I poured impressions and gradually learned to do ordinary rubber work from beginning to finish of the plate. The only instruction I had in filling teeth was by the eye and such reading as I might do of my own volition. My teachers supplied me with Harris' Principles of Dentistry, Wilson's Anatomy, Taft's Operative Dentistry and Richardson's Mechanical Dentistry. They were not subscribers to a single dental journal, and they did not belong to a dental society. Occasionally a stray copy of the *Dental Cosmos* fell into my hands by accident—as I was usually sent to the dental depot to get teeth and other articles. I was also utilized to collect bills and carry up coal to the office. My hours of attendance at the office were from 7 or 7.30 a. m., to 6 or 7 in the evening, as this office did a large *business* in making sets of teeth on rubber and I used to polish the plates and clean the windows and spittoons. My teachers always said that they were doing me a great kindness in allowing me to stay in the office at all and finally at the end of six months paid me fifty-cents per week, which was continued for a year or more. By observation I learned how to extract teeth. This operation was frequently performed in the way of "preparing mouths" for artificial teeth.

The teachers of this historian used about four-fifths sponge gold to one-fifth gold foil. One week one of them did the filling and the other the plate-work. The next week things were reversed. They had one automatic plugger and only the simplest kind of fillings were made, as the rubber-dam had not been thought of as yet. Tongue-compressors and duct-compressors were used and various kinds of cotton and paper rolls and napkins to keep the fillings dry. Pulpless teeth, if filled at all with gold, were treated daily with creosote and iodine, or tincture of myrrh or krameria. Teeth were pivoted with wooden pivots. Any person asking to have their teeth extracted were accommodated at once. I do not remember to have heard any kind of persuasion used to prevent this calamity. Teeth were not regulated in this office. Once or twice I saw *torsion* practiced. Anæsthetics were used very largely and without *accident*. You know, Mr. Editor, the old saw about "Fools rush in where angels fear to tread." My teachers did not hesitate to use chloroform, ether and laughing gas. After I had been reading and looking on for six or seven months, I began to saw teeth open and also to prepare cavities by holding teeth in a bench-vise. I soon began to fill teeth with tin-foil and with scraps of amalgam left over after my preceptors had done with it. I used to take chunks of hardened amalgam, and pulverize it with heavy pliers, and then work it up in a mortar and add a little mercury to make it plastic —fill a cavity, let the stuff harden and then finish thoroughly well, and afterward saw the tooth through the middle of the filling to see how much the stuff shrunk. I did this more than a hundred times. I soon became very expert in packing tin-foil and making cylinders. After about two years I was offered and accepted two dollars per week. About this time I read Smith & Horner's work and a work by Harris & Fox. I also read Bumstead on venereal diseases. There was a homœpathic doctor in the same building, and I read a work on Pharmaco-dynamics. I think we had a few catalogues of dental dealers and these I studied until I knew every cut in all of them. Shortly after this I was offered a partnership by one of my teachers if I could find about one thousand dollars to buy the other out. I did not have the money so I began to look around for an opening. I had never filled more than eight or ten teeth in the mouth up to this time. Pretty soon a former student of the office offered me another partnership for five hundred dollars, but I did not have them and so I started out for myself.

I went to another city and applied for a situation. The dentists all asked me if I could do gold-work. I could not. Finally I got a place where I could earn my board and have a place to sleep in. I also had the privilege of making plates for other dentists. In this way I earned about three or four dollars per week. This continued for a year. My employer knew less than I about the "literature" of the profession, as he had only one work (Harris), but he took the *Dental Cosmos*, and I *read* it. He did about the same kind of practice as my first teachers. I here had an opportunity of *filling teeth in the mouth.* My employer was a great hunter and sportsman, and I had plenty of assurance, so I had plenty to do—in the operating line. Mr. Editor, if you could only see, or have seen, what things I did with teeth, it would make you sorry for the patients. It gave me experience, however.

I soon found that I was doing all the work, and my employer was getting all the money. I determined to open an office. I did so. For a short time I had plenty to do. Very soon I had nothing to do. *I had not been properly instructed.* I could not fill teeth well. I knew nothing of pathology or the treatment of disease. I could make a rubber plate and extract teeth. I was a good (ignorant) anæsthetist. I could make an amalgam or tin filling well in a living tooth, but when it came to treating any disease or an abscess or filling a root, I knew nothing. I could not properly "clean" a set of natural teeth. (Many, older than I was, cannot do it now.) By chance I happened into a dental society meeting, where the members were engaged in discussing the proper method of capping pulps. Never before had I talked to or listened to a half-dozen dentists say a word. That discussion *settled* me. I was an *ignoramus.* I did not think so before I attended that meeting. After that I used to go every month and sit in a back corner and *listen.* I never spoke to any one. I did not *know* one of them personally. After I had attended about a half dozen meetings, one of the members spoke to me, and I thought I would *faint.* But I succeeded, after mumbling something, to reply to his questions. He wanted to know if I would not like to *join* the society. I wanted to join, but I did not have the money; so I just attended the meetings as *his* student, although I had a sign out as a dentist, and was *practicing* dentistry. Oh, such practice! Of course, Mr. Editor, you had better training than this. I found after awhile, by observation and association with the members of the society, that I was learning slowly how to do better work.

I also found out that members of dental societies did not advertise in the papers. My teachers were advertisers. Somehow I did not see the utility of this, as I had something inborn in me that prevented it; maybe I was too poor. The dental society of which I speak was not large in membership, about twenty or twenty-five in all. They had no politics. My practice began to improve, and I bought books and subscribed to *three* dental journals. I read everything, even the advertisements. I even went so far as to attend lectures in a medical college. In about two years I was elected a member of this dental society, and finally became acquainted with every member. Pretty soon two or three new graduates of dental colleges joined the society, and I determined that I would go to college also. I went and was graduated. When I came home I went into the State dental society, and listened to the men whose speeches I had read in dental journals. They seemed to me just like other men when they spoke. But I *listened*. I was unable to speak what I thought, so I wrote it out. My practice kept on growing. I wanted to see and hear the "big guns" of the profession; there were more of them then than now. I was permitted to go as a delegate to the American Dental Association. Never will I forget that meeting. I saw and heard Drs. McKellops, Spalding, Forbes, Judd and Chase, of St. Louis; Drs. Hunt, Knapp and Burt, of Indiana; Drs. Morgan, Cobb and Goddard, Drs. Taft, Watt and Taylor, Drs. McQuillen, Peirce, Buckingham, Jack, Barker, Bonwill and S. S. White, Drs. Cushing, Allport, Dean, Crouse, Carpenter, Kennicott and Noble, Drs. Butler, Rehwinkel, Keely, Field and Robinson, Drs. Atkinson, Fitch, J. Allen, Wetherbee, Abbott, Northrop, Brockway, Marvin, Shepard and a few others, mostly younger men. I determined then and there that I would work and study and *listen* to what was said. I bought more books and attended my local society. That was the place I learned most. I visited other dental societies. Finally I was asked to read a paper. How I worked and perspired, and finally it was ready.

I remember now how husky my voice was when I began to read it. If the members of that society only knew how glad I was when it was finished they would smile. It was nothing to them, *they* had been over the ground many times before, but all the same the paper was discussed. It was emphatically sat down upon. It was published. I thought it a great paper. It *was* a great paper, Mr. Editor. The writer spent weeks at it—he did not write it the evening before it was read. It was copied in two or three journals. It was rubbish, but it contained all the writer's best thoughts, and detailed all he knew at that time. When that task was done, I went to a Medical College again and took my M. D. I did not desire to practice medicine, but I wanted to be a doctor. A real doctor. Perhaps, Mr. Editor, you don't see the connection all this rambling retrospective has to do with "The Future of Dentistry," bye-and-bye you will see. All of this experience and association with men had filled my brain with thoughts about the seriousness and reality of the profession of dentistry. I had become proud of my profession. I was considered by this time to be a growing young man. I received words of encouragement from those above mentioned at various times, and felt, in consequence, that I must not disappoint them in their expectations. I began to read books of travel, biography, essays and works on language. I was fully imbued with the idea that I must educate myself. My own ignorance made me seem in my own eyes microscopic in comparison with the leading men in my own city. When I had devoted two or three years to a systematic course of reading, I began to feel more like a professional man. I was not ashamed of my humble beginning, but I wished that I had been properly prepared for a profession before I entered upon the study of it. My success in practice had not been very rapid because I was unfit to handle a large number of patients. I did not know how to treat them. I had not associated with cultivated people, and I felt that those with whom I came in contact must have noticed my deficiencies. I intended to overcome them. To a certain extent I did overcome them.

As my practice grew in volume I was able to mingle more freely with people of education. At such times I sorely regretted that I had not had a liberal education. I saw that the trouble with the dental profession was in making it *too easy* to get into it. This will apply also to the profession of medicine. In societies, whenever I attended them, I began to advocate a higher degree of preparation of students in the preliminary studies. During my time I have seen the five-year rule abolished, dental laws enacted, and a statement in college announcements that a preliminary examination is required. Not having the pleasure of personal acquaintance with examiners of preliminary requirements for entrance into dental colleges, I am unable to guess at its value. If I am any judge by reading dental journals, we have very few college-bred men in our profession. The papers I see from time to time show that their authors are not scholarly men. It may be that the graduates of the past ten years do not write much, if they do not it is still stronger evidence of the laxity of colleges in admitting students without proper preparation for professional study and professional life. You know, Mr. Editor, that what I say is true, for I have read articles in your journal which were neither creditable to the writers nor to the editor. It may be that there is a lack of original matter; if this be true it makes my position still stronger, that the profession as a whole (18,000 or more in the United States) is made up of very moderately educated men (like the writer). A few—perhaps five per cent.—having what may be called a liberal education, and the vast majority being self-educated or having only a very meager common school training. My personal knowledge of my profession does not extend to the rank and file except in my own State and immediate vicinity, and I must say that in a large city, or in the small towns dentists of meager education do not take a very high rank in the social scale. They almost invariably shun dental societies, regarding them with unfriendly eyes. As my retrospective has about finished itself, I will devote a few thoughts to the present.

II.

Dentistry of the Present.

As a matter of convenience in handling this subject, I will have to go back a little. While my interest in the profession of dentistry has never flagged, still I have looked upon the past few years as being what may be called an epoch—making period. Dental societies have multiplied with great rapidity during the decade just closing. From memory I should say that there are three times as many dental societies in existence as there were in 1880. Dental colleges have increased in number during the same period.

Perhaps it would be safe to say that twenty new colleges have come into existence in ten years, (one quarter of that number, Mr. Editor, in your own city!) Some people cannot understand the phenomenal multiplication of dental colleges. *I can.* It is a case of the blind leading the blind. Seriously, since dental laws have been enacted, private preceptors *must* send their students to college, it is easier for them to get a license to practice with a diploma, than it is to pass State Boards of Examiners. A few colleges could not train the number entering the profession, *unless the standdards of admission were raised*—hence new colleges and more dentists entering the profession. Mr. Editor, this is a serious question. It is one of the questions of the present. We will go back for a moment now to my plaint, about not having received a collegiate education before entering a profession. If the proprietors of colleges, and the teachers engaged in them, were men of high acquirements in literature or science or all college-bred men, the classes in dental colleges would not be so large—there would be no necessity for so many "colleges." They could not exist. I have before me the announcements of all the dental colleges in the United States. I look over the names for literary and scientific degrees. What do I find? I find that the degree of A.M. or A.B. if held at all, is appended after the name of the professor of surgery, anatomy, chemistry or physiology. These subjects in dental colleges are generally taught by medical men, not by dentists. Occasionally I find a Ph. B. or Ph. D. held by a dentist. In not to exceed ten cases do I discover A. M. or A. B. following the name of a dentist. Why is this? Is it because educated dentists are rare, or because they are not interested in the future of dentistry?

I feel strongly in this matter, Mr. Editor, as you may perceive. I believe that educated dentists are so far in the minority in the United States that a full college faculty could not be gathered together anywhere, unless it were in New York or Philadelphia. Do not misunderstand me. College-bred dentists, before they began the study of dentistry, is what I mean by educated dentists. Apathy and ignorance combined is what supports a number of dental colleges to-day. I am not trying to throw mud on the colleges. They are engaged in the *business* of making dentists. If every high-minded dentist would protest against the influx of so many illy-educated and illy-prepared men, in a few years there would be some inducement for the college-bred sons of merchants and others to choose dentistry as a profession. The whole trouble lies in the fact that dentists are not professional in their methods of practice. They make the practice savor of the workshop. Too many are nothing but mechanics, and poor ones at that. And this, Mr. Editor, is our chosen profession! Our ranks are recruited from all vocations except the college. And I, like many of my brethren, have been claiming that dentistry is a specialty of medicine—it ought to be, but what is it? What is it at present? I cannot pick up a daily paper but I find from two to a dozen flaming advertisements by graduates of colleges. VESUVIAN.

(TO BE CONTINUED.)

ROOT CANAL FILLING.

BY GARRETT NEWKIRK, M. D., CHICAGO, ILLINOIS.

In using Mrs. Northrop's cones or other fine "points," for filling root canals it is nearly always advisable to clip the small end, not squarely but diagonally, with the scissors. The large end should also be clipped, as a rule, so that the whole shall not be much longer than the root to be filled. The instrument to carry the cone should be blunt and smooth, and slightly smaller than the opening of the canal. It should be drawn tempered to admit of being bent to any desired angle. For filling anterior roots of molars, upper or lower, it should be bent about an inch from the end, to correspond in direction with the canal. It should be warmed just enough to take up and carry the cone, but not so much that it may not be readily detached by a little turning. With a glass held so as to reflect clearly the pulp chamber, a steady hand may carry the point directly and accurately to the canal opening.

To facilitate access, the external opening should be free and wide. Whatever overhanging walls or weak cusps there may be, that will sooner or later have to be sacrificed to insure a permanent filling, may as well be removed at the beginning, once for all.

I have been surprised to see teeth in which good operators have attempted to treat and fill pulp canals through a small external opening, when the simple excavation of decay and chiseling of their walls would have given them abundant room.

Don't! ! Don't attempt to operate through a tube when you may as well have a funnel.

Again, as a rule the cone should of itself so nearly fill the canal wherever a cone may be used at all, that very little of the dissolved gutta-percha is needed. There are canals too fine for any cone, and occasionally one too small and crooked for any broach to pass its entire length. After a day's saturation of the general pulp chamber with oil of cassia I have not had trouble result from these in any case, I think.

SURGICAL CLINIC—CHICAGO COLLEGE OF DENTAL SURGERY.

RESECTION OF THE INFERIOR DENTAL NERVE.

Service of T. L. GILMER, M. D., D. D. S.

This case calls for surgical interference, namely, resection of the inferior dental nerve. This gentleman, the patient, is thirty-seven years old. He has suffered from facial neuralgia for over nine years. He tells me that when he first noticed the pain it was situated in the body of the inferior maxillary bone, at a point corresponding to the roots of the second bicuspid tooth on the right side, and still remains most prominently here. Later on he has had a slight pain in the gum on the lingual side of the jaw, but this pain is not always felt as is the one deeply seated in the bone. If it was, or if the pain at this point was independent of the other, we should feel doubtful if action of the inferior dental nerve anterior to the point where the mylohyoid branch (which supplies the gum where the pain is located) is given off would afford relief, as it would indicate that the lesion was posterior to this division. The probabilities are that the deep-seated pain felt in the jaw, and which is easily excited by a touch on the lip over the mental foramen, or by a draught of cold air on this side of the face, indicates the location of the lesion, and that the pain felt in the gum is reflected from this point, and that it will pass away with the removal of a section of the inferior dental nerve. The patient has been treated medicinally by skillful physicians with but temporary relief, and has had two sound teeth extracted with no benefit. Before section of a nerve for neuralgia, the mouth should be thoroughly examined to determine whether there may not be some peripheral irritation, which may cause the pain. In this case we find none, and I conclude the operation for section of the inferior dental nerve indicated. We will perform the operation known as Garretson's operation. We wish to perform it as nearly aseptically as possible, so that we will have adhesion of the soft parts by first intention, or cicatrization without suppuration. To this end, with the exception of the hand-piece of the dental engine, we sterilize the instruments to be used by placing them in boiling water for a few minutes. The hand-piece we dip in a 50 per cent. solution of carbolic acid in glycerine. The hands are thoroughly cleansed with soap and warm water, afterward washed in 1-4000 bichloride solution. The instruments, after sterilization, are laid on and covered by a towel wrung out of a 1-2000 bichloride solution. The face, having been shaved, is washed in the 1-2000 bichloride. Among the more prominent precautions to be observed in performing this operation, are, first, not to sever the facial artery, and, second, if possible not to sever the inferior dental artery.

The facial artery is easily found, since it passes over the base of the jaw in the notch just anterior to the angle. Placing the thumb of the left hand on the artery, the soft tissues are severed on the base of the bone from the thumb forward, to a point slightly in advance of the mental foramen. The incision is made at the base of the jaw in preference to one higher up, that the scar may be as nearly hidden from view as possible. The soft tissues are now turned up so that the inferior dental canal may be reached. We now seek out the mental foramen which we find greatly constricted. This constriction may be the secret of the trouble, but as I am not certain that the cause lies here, I will remove a section of the nerve posterior to the foramen. With this circular saw I will make two parallel incisions in the bone about three-sixteenths of an inch apart, extending from the mental foramen immediately over the dental canal nearly as far back as the cut in the soft tissues. The two incisions in the bone are connected posteriorly by this small trephine. With an excavator the narrow strip of the outer plate of the bone is easily turned out exposing the vessels. The nerve is taken up with this small tenaculum and raised from its bed, care being exercised not to injure the dental artery. That part of the nerve posterior to the opening in the bone is thoroughly stretched and then partly cut and partly torn off just back of the incision in the bone; that part anterior to this is removed from its bed and severed at the mental foramen. The edges of the bone are now nicely rounded and the particles of tooth syringed away with the bichloride solution, and the wound thoroughly washed, first with ether to remove the fat which might interfere with the healing process, then with alcohol to further remove fat and for its antiseptic qualities. The wound is now closed by carbolized silk sutures and the parts washed with the carbolic acid solution in glycerine. The line of incision is covered with Lister protective taken direct from the bichloride solution and on this the moist lint antiseptic dressing is placed, the whole being covered with gutta-percha film. The bandage supports the parts. Unless there are indications of suppuration this dressing will not be disturbed under five or six days, when if the case progresses favorably, the sutures may be removed.

THE SIXTH YEAR MOLAR.

BY J. J. R. PATRICK, D. D. S., BELLEVILLE, ILL.

The first tooth germs that appear in the human subject are the anterior deciduous molars. They do not make their appearance through the gum, however, until all the teeth anterior to them have appeared. It is very clear that the first deciduous molar stands in the same relation to the deciduous series of teeth that the first permanent molar does to the permanent series, for the first permanent, or sixth year molar, is the first tooth of the permanent series to calcify. It commences its formation with the deciduous series, but like the first deciduous molar, it enjoys a period of comparative rest. When the full set of deciduous teeth are in their decline or retrogressive metamorphosis, it experiences a period of active progress in connection with the succedaneous or permanent anterior teeth and advances with more than equal pace and appears through the gum one year before the permanent central incisors. The deciduous series are more regular in their development from the anterior to the posterior, but in their decline or retrogressive metamorphosis they conform to the progressive metamorphosis of the succedaneous teeth. Thus the canine of the deciduous series is the last to be exuviated, and the canine of the succedaneous series the last to appear through the gum. The permanent canine or cuspidatus appears through the gum between five and six years after the sixth year molar, and one year earlier than the twelfth year molar.

The deciduous canine appears through the gum from the fourteenth to the twentieth month, always before the deciduous second molar from four to fifteen months. Thus the permanent canine bears the same relation to the twelfth year, or second permanent molar, that the deciduous canine bears to the second deciduous molar, in point of coming into service. And the first permanent or sixth year molar bears the same relation to the permanent canine that the first deciduous molar does to the deciduous canine.

This order of progression and retrogression of the teeth and their processes is strictly in accordance with the mechanism that moves the lower upon the stationary upper jaw, for as soon as exuviation of the deciduous teeth and their process sets in, the jaws commence to expand and elongate, the growth taking place posterior to the deciduous molars, and the power that moves the lower upon the stationary upper jaw increases in size with equal pace from the anterior to the posterior. By this growth the deciduous molars are removed from the power, and in consequence lose their usefulness as molars and are replaced by more conically formed teeth, and the loss in power is compensated in the form of the teeth. Observation teaches that the farther teeth are removed from the power the more wedge-shaped they become. Thus we see that the anterior succeeding teeth are not changed materially in form from their predecessors. The twenty deciduous teeth of childhood are replaced by twenty succedaneous teeth, twelve of which are larger and stronger than their predecessors, but the eight posterior ones are smaller and are bicuspid. Thus the size of the anterior portion of the dental arches is preserved. The growth of the succedaneous teeth and of the process which surrounds them is from above downward, and from below upward. The growth of the jaws in the region of the twelve permanent teeth is from the anterior to the posterior and from above downward for the upper, and from the anterior to the posterior and upward for the lower. The sixth year or first permanent molar has its origin in a small portion of the primitive dental groove which remains open for that purpose, while all the other permanent teeth are productions of a secondary groove. When we consider that the sixth year molar is the first permanent tooth to calcify, and is formed and comes into use with the deciduous teeth and continues with them some five or six years, we cannot be surprised at its early apparent decay. It is the largest and strongest of the permanent series, and in actual use longer than any other tooth. Exuviation of the deciduous process is confined to the region of the deciduous teeth and does not extend to the process of the sixth year molar. This phenomenon can be observed when a second deciduous molar is retained beyond its time: exuviation is arrested and the deciduous process becomes a bony cicatrix produced by some slight pathological condition which arrests the development of the succeeding tooth and its process. We are indebted to John Goodsir, Jr., a Scotch surgeon, for the discovery of the true position of the sixth year molar in the dental series, for it was he who first announced "that the sixth year molar, when considered in its anatomical relations, was decidedly a tooth of the first set, but if considered physiologically it must be classed with the permanent teeth."

To the Editor:—In describing the physiological and anatomical relations of the first and second series of teeth in the human subject at the Odontological Society of Chicago, at the October meeting, I applied the word "succedaneous" to the twenty permanent anterior teeth, because they succeed the twenty deciduous teeth of childhood, and to distinguish them in their relations to the deciduous series from the twelve permanent molars that have no predecessors. *The word succedaneous has no reference to the form of the teeth, but to the relation they bear to the deciduous series in time and space.* We would not say a succedaneous molar, for there is no such molar. The teeth that succeed the deciduous molars are bicuspids. On the other hand, permanent central or lateral incisors or canines would be correct; but permanent bicuspids would not be correct, as there are no deciduous bicuspids to call for such distinction, yet the bicuspids belong to the succedaneous teeth.

When a deciduous tooth is removed by the physiological process of exuviation, the succeeding tooth is not disturbed in its development; but if a deciduous tooth is removed by the pathological process of exfoliation, the succeeding tooth may suffer in consequence, hence I was very explicit in drawing the distinction between exfoliation and exuviation in my address before the society, for I used these words in preference to the much abused word absorption, which would be meaningless in this connection. If a speaker in a dental society should have occasion to use these terms he will use them as I have or they will be unintelligible.

By giving this a place in your journal I shall feel obliged.

Most sincerely,

JOHN J. R. PATRICK.

PROCEEDINGS OF SOCIETIES.

INTERNATIONAL DENTAL CONGRESS.

(*Translated by A. Church, M. D. from L'Odontologie.*)

The Opening Session was held Monday, September 2, 1889, in the Conference Chamber of the Trocadero Palace.

M. Gariel, professor of the Faculty of Medicine, Honorary President.

The session was opened at 9:30 a. m. by M. Gariel giving the floor to M. David, President of the Committee on Organization of the Congress.

Discourse of M. David.

Gentlemen:—In the name of the Committee on Organization of the Congress who have done me the honor to elect me President, I beg the foreign members to accept my thanks for the sympathy which they have manifested in giving their adherence to our Congress, and particularly in taking the trouble to join us under these circumstances. I address thanks not less sincere to my confrères who have come from various parts of France without forgetting the Parisians whose assistance has been for us a valuable encouragement in bringing our work to a fitting termination.

The reunion of our Congress was indicated by the concurrence of circumstances which at present attract to Paris such a large number of foreigners. It was to be supposed that dentists would not escape the common attraction. and we have thought that there would be an opportunity to profit by this occasion in the reunion of colleagues from abroad in order to exchange with them our views upon the numerous questions of dental art and science now under discussion. But from another point of view this reunion was called for. I have just spoken of dental art and science. Dental science! What an improper expression many physicians might say. Since when has the dental art become a science? Whether one wishes it or opposes it, specialties are created and established because they respond to an actual demand. The division of labor imposes itself as a necessity. We cannot escape economic laws. In the measure that our field extends and its cultivation becomes more difficult, it requires special laborers. Odontology, without doubt, may be to-day considered as a science, as a branch of medicine, and its domain is now sufficiently broad to occupy all our intelligence and all our activity. It demands first of all the general information of the physician, and in a special point of view its teaching, its practice, necessitates the concurrence of many individualities. There is also a point that I dare scarcely indicate, for so much yet remains for us to accomplish in its direction —*hygiene.* We must expend many efforts to make humanity accept the benefits which odontology may render them through a well formulated hygiene, appropriate to the various states of the individual, from his entrance at school to his adult years. You, who are practitioners, see how many diseases, how many deformities in human mouths might be prevented. I, in passing, point out this study to the attention of the public authorities. Further, it is in our era that science penetrates further and further into our domain, as I shall show shortly, and it therefore seems good to us to mark this epoch by a congress. We know the history of the dental art. Without wishing here to make claims unpleasant for any one, we may say that it was born in France with Fauchard, whose illustrious followers, Bourdet, Bunon, Duval, Delabarre, Serre, Miel, have not allowed its glory to terminate. But if the first dentists of the 18th century raised their art so high, it is because they were in some ways, a reflection of the great surgeons of the time who had themselves consecrated a part of their studies to the development and diseases of the teeth. Read the works of Dionis, of Mery, of Jean-Louis, Pettit, of La Motte, of Garengot, and others, and you will see that these surgeons, for the most part members of the Academy of Sciences, did not disdain to write one or many chapters upon the diseases of the teeth and the operations which they demand. This has been equally the case abroad, where in the first half of this century and even later, a supremacy over us in the dental art has been acquired. The works of our dentists of the 18th century have been translated into nearly all languages—into English, German, and Dutch. They have studied abroad the dental art according to French ideas. But then the great surgeons like Hunter in England have given attention to the question; they have studied it at length, and their writings propagated in America have been the origin of that progress in dental art which has for a long time given great popularity, and justly, to English and American dentists.

During the last twelve years a similar reaction has taken place in our favor. This *renaissance* in France has had two causes which no one, I feel certain, will contest, viz.: the works of M. Magitot and his students, and the creation of two dental schools at Paris. Thanks to these causes, dental art has made new progress in France, and tends to become a science. In speaking of the works of M. Magitot, I do not forget, gentlemen, those which have come to light abroad, either before or after his. I do not forget further his collaborators, Robin, Legros, and others. I wish simply to point out here the influences of his works upon the renaissance of dental art in France, and its transformation into a science. Abroad the movement goes on in the same way, and I render homage to the works of Coleman, Tomes, Kölliker, Harmower, Underwood, Miller, and others. You can better determine our progress in this art, and can get a more exact idea of it, by examining the enamels of dentists of the fourteenth class, and in visiting our dental schools.

As a science, odontology has made, it must be recognized, rapid progress for a long time. Learned men, who have occupied themselves with the teeth—Cuvier, Saint-Hilaire, de Blainville, and Broca—have limited themselves to the study of their evolution and their anomalies. It is only during a dozen years that, thanks to the progress in microbiology, dental pathology has come out of the chaos where it slept; yet the first microbes which have been recognized belong to the mouth. It was in examining the saliva under the microscope that Loewenhock, in 1683, discovered animalcules and bodies whose description corresponds absolutely to leptothrix buccalis, and it is only during recent times, after two hundred years of forgetfulness, that this study has been assiduously again taken up. One need not, therefore, be astonished that we are so little advanced in the questions which belong to dental pathology. But some have profited by the studies that have been made with common microbes as to the roles they play in different diseases; and we hope that progress in this direction will be rapid. Already this role is clearly seen in caries—in this affection so well known clinically, so obscure in its pathogenesis, which we have called, by fault of a better name, *maladie de Fauchard*—in various abscesses which spring from the jaws and in the neck. A great number of searchers are busy in this work abroad as well as in France, and in observing the rich bibliographic index which stands at the head of the recent treatise of Miller upon the microbes of the mouth, one feels that this study marches abreast of the others, and that the solution of these questions will not be long awaited.

The second factor to which I attribute the renaissance of French dental art is the creation of two special schools. The services which they have both rendered are incontestable. In waiting for the government to be willing to regulate the studies of dental art and its professional exercises, we hope that every person practicing this art in France will be able by three years of study in one of these schools, to inspire his clients with merited confidence. These two schools, gentlemen, have been rivals for a long time and may so remain. I cannot foresee the future, and consequently cannot unveil it for you, yet they were one day united in a patriotic sentiment which does them great honor—the day when it was determined to organize this congress and to show our provincial and foreign confrères that Paris had it at heart to elevate our profession as high as possible. I publicly express to them my recognition of the fact. If it were permitted me to express an opinion here, it would be my wish to see this rivalry cease and to see them united in a marriage, not of inclination, but of reason. Everywhere union is strength. The dental art cannot escape this law, and I doubt not that its progress would be more rapid in that day when our two schools should unite to work in common. It is in this spirit of union, of concord that we have admitted without distinction all practitioners, whether they were physicians, doctors, or simply mechanicians. We have wished that this congress might be one of dentists indicating our common character, and the specialization of our practice. Our entity does not date from yesterday. Is it not consecrated by writings, by titles, and by our predecessors. Hunter recognized it in a very clear manner. In his treatise upon the teeth he indicates the diseases which belong to the physician and to the surgeon, "but those," says he, "which are peculiar to the teeth and their immediate appendages belong to dentists." Here let us have but a single thought, to strive together in the measure of our forces for the advancement and the elevation of dental surgery. I hope that the foreigners who have done us the honor of visiting us will carry away an impression of the state of the dental art in France which shall not be too unfavorable. We have particularly wished to show you, gentlemen, a professional corps worthy to receive you. By a very precise favor this corps, without regulations so to speak, only tolerated, receives to-day its first official stamp. For it we warmly thank the Minister of Commerce and of Industry, whom we are happy to see represented by our eminent master, M. Gariel. Without doubt you will observe among us as elsewhere certain shortcomings; but there are very many of them in the literature of the two worlds, and it is proper for congresses to point them out and to seek to overcome them. This is what you are about to accomplish in the sessions which have brought you together.

I invite you then, gentlemen, after you have organized yourselves in your sections, to stop the proceedings at the commencement for the formation of bureaus. My functions terminate with this session.

Permit me, however, to express a just tribute of regret for the two collaborators that we have lost since the constitution of our committee. I would name MM. Brasseur and Andrieu, whose places yet remain vacant among us.

I express the wish that The Dental Congress upon which our zealous Secretary General, Pourchet, has expended indefatigable devotion, may not be less interesting than those which have held their sessions at Paris this year. This will be a new success to add to that of our exposition, which not only will honor Republican France, but which further will give a new impulse to the civilization of the whole world.

M. Gariel, Honorary President, then delivered the following address:

ADDRESS OF M. GARIEL.

Gentlemen: The Minister of Commerce and General Commissioner of the Exposition, being prevented from attending the opening session of the International Dental Congress, has delegated me to replace him and to preside at this session. My first word would be to salute in the name of the Government of the Republic those who have responded to the appeal which has been addressed them, and more particularly to express a welcome to the foreigners who have come to bring us the assistance of their intelligence and of their talent.

When the fundamental plans of the International Exposition of 1889 had been established, and although every confidence was had in the success of the work—it does not become us to say how complete that success has been—it was perceived that whatever marvels of the arts and industries might be accumulated, it would not be an integral representation of the progress of the human mind at the end of the 19th century. To complete a work, which should fittingly celebrate the centenary of one of the greatest dates of the history of peoples, it was thought that in addition to the collection of material products, it was fitting to join, so to speak, all the results attained in all the branches in which the activity of the human mind is exercised. Taking up again the idea that had been fruitful in 1878, it was decided that there was an opportunity to organize International Congresses, and a Special Commission, the Superior Commission of Congresses and Conferences of the Exposition of 1889, was charged to occupy itself with this organization. The Commission decided very wisely, I think, that it would not itself organize the Congresses, but that it would propose to the Minister the nomination for each Congress of a committee which might have the charge and the honor of bringing these Congresses to a succcessful completion. The Superior Commission reserved in its attributes the selection of Congresses which should be accepted and officially recognized by the Government, and in a certain measure the control of the programmes of these Congresses. It was then, to this Superior Commission, that the demand for an International Dental Congress was made. I do not think that I shall be lacking in professional discretion in giving you some of the details of the reception this demand received, for there may be in it some instruction which should not be lost.

I should tell you that the first impression was not favorable. The Superior Commission, composed of men eminent in letters, arts, sciences, industry and commerce, was not well posted in questions relative to odontology, and two objections were presented as serious. In the first place the opinion was expressed that there was no utility in bringing together a dental congress, where only technical questions might be treated, or where the skill of operators might be made manifest, but where there was no occasion for any scientific discussion. It was not difficult for him who was charged to present your request to show how erroneous was this opinion. It would not have been unreasonable some years ago. But works on odontology—serious works, works which denote in their authors profound intelligence, these works show that it is a part of the healing art and rises absolutely to the plane of a science. The creation of special schools in nearly all countries is ample proof of the transformation which your profession has undergone. In these schools there are not only practical exercises, a sort of manual apprenticeship, very important moreover, but there is also theoretical instruction, the necessity for which is no longer disputed by any among you. These reasons convinced the Superior Commission upon this point. There would not have been the shadow of hesitation if it had had knowledge of the detailed programme of your Congress, which is about to be distributed to you, and by which it would have been struck with the absolute scientific character of the announced communications.

Another point which made the Superior Commission hesitate, right or wrong—I would not think that it is altogether wrong—it was convinced that professional rivalries were very active among dentists. These rivalries should not be entirely suppressed. Whatever may be the trade, the occupation or the profession, they are in a certain measure the condition of progress. But the general opinion was that these rivalries took on among you a character almost of personal animosity, which would prevent any success either in the Committee on Organization or in the Congress itself. This objection was immediately removed by the manner in which the request for the Congress was presented. The two rival societies, the Odontological Society of France and the Society of Odontology of Paris, laying aside the questions which divided them, had united to take the initiative in a Dental Congress for the organization of which an equal part had been assigned to each of them. This collective demand showed that if professional rivalries existed, they might be put aside by all when a useful undertaking was in question. The Superior Commission was very much struck by this accord, as I have been myself, and after some incidents of less importance, the organization of the Congress was decided upon, and the Committee put itself promptly to the task. I should not applaud what it has done, but you may already convince yourselves by the programme of your session, by the host of adherents in general, by the number and by the character of the foreigners who have inscribed themselves here, that these works have been fruitful. There is, gentlemen, I must say, instruction to be drawn from this history. It seems to me that the objections which were produced in the Superior Commission are the expression of opinions which have general currency in public. It is necessary that they disappear little by little, that your profession may be estimated at its just value.

The installation of schools, the establishment of a special diploma in the countries where it did not before exist, will contribute to the accomplishment of this result. The production of works having a truly scientific character will equally aid in showing your profession in a proper light.

As for the professional rivalries in this Congress and in the reunions which directly or indirectly will be its outcome, see to it that they do not exclude pleasant relations and courtesy, and you will thus reply victoriously to an objection which was not, perhaps, without foundation.

I think, gentlemen, it will be good that this International Dental Congress should be followed subsequently by other reunions, the nature of which is to be determined. Whether other special congresses should be called, or whether it should be decided to organize an Odontological Section in the medical congresses, I must leave to you. The question is too complex for me to be willing to give an opinion. That which is of importance is that again you may be able to unite and to continue the work of progress for which you are here to-day assembled.

Gentlemen, I declare the International Dental Congress of 1889 to be open.

This discourse was received with long applause.

DISCOURSE OF DR. GAILLARD.

Ladies and gentlemen: Before commencing the duties for which you have designated me, permit me to express to you my thanks, and at the same time my fears, and to say how much I am touched by such great honor. Your selection places me in great embarrassment, and without wishing to pose as a new Cincinnatus roughly dragged from his chariot, I would say to you that suddenly called from Dordogne where I tasted in peace the sweetness of a merited repose after a year of labor, I see myself obliged to ask your indulgence for those attributes to which I do not pretend, for which I am not prepared, and the honor of which I certainly should have declined if I had not been assured of the valuable assistance of our Vice-Presidents, of our Secretary General, upon whom all the charge of the organization of this Congress has weighed during so many months, and, finally, all my colleagues of the Commission whose disinterested devotion to the common cause I have appreciated during our labors of organization. But, dear colleagues, this recognition of duty accomplished and of purpose attained, which permits us to flatter our self-love, may not make us forget that the men who by their position, their knowledge, their capacities, and their talent found themselves destined to take part in our labors and to preside over the first sittings of dental science in France, to-day are missing from our midst, struck down by death,—Drs. Andrieu and Brasseur, both members of the Commission of Organization. Let us here render to them a last tribute of recognition.

Others, on the contrary, are absent holding themselves apart, shut up in a certain form of professional archaism, preferring to abandon this resistless movement, this sort of professional renaissance which has been going on for some time, than to guide it by their knowledge and experience, by placing themselves at its head and by assuring its direction.

Upon our return from the monster Congress of 1881 in England, where we had been as delegates, and in which our regretted president, Dr. Andrieu, took part in the 12th section, we had at various times agitated the question of a reunion of dentists, but we did not feel the ground properly prepared beneath our feet. The success of this Congress had struck us. We had comprehended the professional interest of such reunions, where men like Tomes, Coleman, Cartwright, Saunders, Hutchinson, Atkinson, of New York, Magitot, and so many others had set forth the results of their studies, And further, we had retained as a pleasant impression, that it was the first time since the origin of Congresses that everything which pertains to the dental art had been inscribed upon the programme, and that a special section had been created for it. The organizers of the former Congresses which were held at Paris, Florence, Vienna, Brussels, Geneva and Amsterdam, probably did not imagine that there was in odontology or dental pathology, scientific questions sufficiently important to occupy the activity and intelligence of specialists. It is necessary, therefore, to attribute to England the breaking of these old errors and the bravery of this innovation.

Upon his return from the Congress at Washington, in 1887, M. Dubois again took up the idea of a French Congress, and was happy enough to find an echo to his proposition. In 1878, when England and America possessed Odontological Societies, dental schools, monthly periodical publications, France, which had been the cradle of the dental art, and was rightfully proud of those who had exercised it with so much brilliancy—France, I say, possessed none of these advantages. Dentists scarcely recognized each other. No center of reunion existed where they might exchange ideas and discuss questions of interest to the corporation. Each exercised his profession as he understood it without communicating his processes to his confrères, even hiding them from his neighbors. No special French publication existed at that time.

These things would certainly have longer lasted if an Odontological Society had not been founded under the impulsion of certain practitioners; but such is the progress of human affairs, that if any Society be founded, whatever may be its excellence and good intentions immediately their appears an antagonistic organization. The law is human. We need not complain of it since it engenders discussion, whence comes the truth. The march of events being everywhere the same we encountered in our dental organization the same difficulties which has been presented in England in 1859 under the organization of the "Dentists' Act." To-day, thanks to individual initiative, a part of these desiderata have been accomplished; there exist centers of reunion where the moral and material interests of the profession may be discussed; centers of instruction have been created clearly filling a need since their courses are assiduously followed. Special periodical publications have been created; finally, two societies were founded for the purpose of the scientific development of our art, seeking to render to our profession its former degree of elevation, even willing to extend their benefactions to those deprived of fortune. Services have been organized in the schools, bureaus of benevolence, and their philanthropic initiative has influenced even the council of public assistance. You see, gentlemen, what individual activity can do. Here is the sole safety of our Society; to show to the State what it should do in regard to instruction, to indicate the results obtained and to give as much intensity to this movement of professional uplifting as necessity for it is imposed upon us. But a good portion of the road has already been traveled and not the least difficult, for as said by our Honorable President a moment ago in opening the sessions, it was not without contention even in the Commission that our proposition for a Congress was accepted. We then here owe public thanks to the members of this Superior Commission of Congresses for not having deserted us and for having created that which we have sought for ten years, an official recognition, a sanction for our efforts and for our struggles. This assistance the State cannot now fail to continue to us, especially when its representative shall render an account of his task, when he shall have exposed the order and the value of our work, and finally when he shall describe this assembly composed of personages who, for the most part, feared not to face the perils of long voyages to respond to our appeal and to share with us their discoveries. If we have been able in so short a time to assemble dentists in sufficient number to enable us to constitute a Dental Congress, we should not be satisfied, for there yet remains much to be done to conquer, and to render to the heads of our profession that consideration which the public willingly accords to members of other learned societies. We must make of our corporation a union of men of superior instruction, commanding respect as well by their conduct as by their attainments. These reunions may tend to this end in drawing tighter the bonds of fraternity.

Permit me then, dear confrères, in the name of our two Societies of Odontology in France to extend to you a welcome, thanking you for the honor that you have done us in visiting our city and bringing your valuable assistance to this great intellectual banquet. I cannot close without thanking particularly the general organizer of the Congress, my master, Professor Gariel, for all the benevolent interest he has never ceased to manifest for the organization of our assembly, lavishing upon us the counsels of his great experience. (Prolonged applause).

REPORT OF M. POURCHET.

Gentlemen: After Professor Gariel, one of our illustrious scientists, who has very fittingly represented the Minister of Commerce and of Industry, after our president, a past-master in the art of charming assemblies, it is perhaps pretentious, if not audacious, for me to take the floor, and consequently my embarrassment is great. But the congress itself and the details of its organization ought to engage our attention. I shall not employ a vain oratorical formula in saying that I am strongly moved, and that my inquietude is only tempered by my feeling of a duty accomplished. I ask then your indulgence, for in completing my task it is necessary to point out to you what we have done and what response has been made to our appeal. Breaking away from the past we have wished to show that dental art has not lost anything amongst us since the day when our country gave it birth. I want further to say that our efforts have been recognized, and it is with legitimate pride that we see four hundred confrères, the elite of the profession, coming with eagerness to bring the light of their assistance to this congress which I hope will be the aurora of a new era of progress.

Before commencing, I should reply to an accusation which was laid against us at the moment when we outlined our project, for we should not accept the reproach that has been addressed us of having desired to interfere with the congress to take place in Berlin in 1890. That has never entered our thoughts, and our justification will be completely made in recalling when and how our congress was decided upon. Bring to your memory the magnificent sessions which took place in 1887 at Washington. Two of our colleagues, MM. Dubois and Kühn, had the rare fortune to be in that city at that time, where they were received with a warmth for which we cannot too much thank our confrères across the sea. If you have read the accounts which were published after that imposing reunion, you have seen that the idea of an International Dental Congress was brought forward by our colleagues at that time. I shall have completed this historical point when I tell you that the year of the exposition, being a happy presage of success, had partly guided the promoters of our congress in the selection of this date. Some days later, it is true, the news became current that in 1890 a medical congress would be held at Berlin. The coincidence might, at first sight, have lent color to criticism, but the two dates incontestably give us priority. From the resolution taken in Washington to organization was but a single step, and was quickly taken. The preliminary commissions assembled on the 27th and 31st of July, 1888, to study the means of accomplishing the end which we have to-day attained. Two societies of dentists, two schools existed at Paris, which in spite of divergencies of opinion in regard to the means of elevating the dental art, not the less, strove for the same object, to make of the dentist a man of training.

A commission of eighteen members were named, taken half from the Odontological Society of France, half from the Society of Odontology of Paris, and work commenced the 8th of August, 1888, as a free congress. In September we were informed that the government of the Republic, always anxious for the intellectual development of France, would take under its patronage a certain number of congresses, and recognizing that thereby valuable support would be accorded us, steps were immediately taken to secure it. Here, gentlemen, permit me by way of parenthesis to render homage to Professor Gariel, and to thank him for his kind assistance at this juncture, for, thanks to his help, official recognition was given us and our first congress opens under the best auspices.

The fourth of December the eighteen members, composing the primitive commission, were named by the Minister of Commerce and of Industry, as members of the Committee of Organization of the International Dental Congress. We had then only to organize ourselves, and that was immediately done; recognizing for each society an absolutely equal part in the organization. From this moment regulations were elaborated and all our efforts tended to simplify the work as much as possible. To accomplish this a division into sections was indicated, and four were made as follows:

First Section—Normal and Pathological Anatomy and Physiology.

Second Section—Operative Dentistry, Special Therapeutics and Materia Medica.

Third Section—Prosthesis and Orthopedic Dentistry.

Fourth Section—Deontology and Instruction.

As you see, all the branches of our profession were represented and all subjects to be treated found a place. We have thought even that in drawing up a list of questions we might give valuable indications to those taking part by directing their attention to those subjects which have seemed to us the most important. That is why we have joined to the regulations which you have received a sketch for the work of each section. Desiring to be brief, I will not repeat this enumeration, for that would be an abuse of your patience. There ended the first labor of organization.

Our duty then was to make an appeal to dentists and to all those who were interested in our specialty. The regulations were sent, with an invitation to take part, to all our confreres living in France, and to all those abroad, through the intermediation of the presidents of their societies, with the assurance in advance that we should be listened to. At first the replies came in slowly. In presence of the fact that it was the first attempt among us to form such a congress, hesitation was perhaps permissible, but soon from all France—from all parts of the world—acceptances of an invitation came in great numbers, and success became an accomplished fact. Our efforts were seconded by numerous confrères, and by the best of all the nations. Here I wish particularly to insist upon the devoted assistance of our colleagues abroad who, I must say, have largely contributed to our success in being willing to represent us in their countries, so that it is with legitimate pride that we cast a glance over the honorary bureau which are the expression of our recognition, and at the same time just homage to talent and services rendered our profession. In the first rank you see the master of us all, the illustrious John Tomes, whose life is without question one of the brightest pages of our professional history. At the side of this master we see a staff of practitioners of proved talent, who will certainly not reproach us for having placed Mr. Tomes at the head of the list. Yet, gentlemen, when you have taken this glance, I am sure that you will regret as I have, to see that some differences of opinion deprive us of the fellowship of certain confrères whose value and past scientific attainments would have contributed not a little to illuminate our great reunion with a still greater brilliancy. Beside this voluntary absence, or these absences to speak more correctly, there are others, but these are indeed involuntary.

I cannot keep from my thoughts our recent painful bereavements. Two places are empty, those of our colleagues, MM. Brasseur and Andrieu, who were taken in a short interval from the affections of all our great family. Both were part of our Committee, and I do not hesitate to say that we have lost in them the most valuable auxiliaries, the guides in some sort of each day. To pronounce an eulogy upon these Masters does not enter into the burden of this report, of which the first quality is to be brief, but yet it is an important duty. It is the duty of all of us to salute for the last time the memory of those devoted men who have contributed so large a part toward our elevation, and who have enriched our scientific literature by numerous works of incontestable value. I shall not pause then further over these painful thoughts, but let me continue by saying that a large number of Dental Societies have been willing to concur in our work and have sent us delegates to represent them. I should fear to abuse your patience if I enumerated all of these. It is merely permitted me to join my thanks to those which our President a moment ago has addressed them. By what precedes, you see, gentlemen, our reunion promised much, but there yet remained a last effort, and that was to obtain communications, without which all Congresses are reduced to a confraternal reunion always very agreeable, but possibly not very fruitful in discoveries. Here, I must now say, we have communications in abundance, and it is sufficient for you to read the programme to judge of the importance of the work which we have undertaken.

I come, gentlemen, to the end of my task, but I should not terminate it without acquitting myself of a last duty. I wish first to extend to my colleagues who have done me the high honor of conferring upon me so important a position as that of Secretary General, an expression of my vivid and profound gratitude. I am the more sensible of these marks of esteem and of confidence, inasmuch as in the Committee there are confrères for whom the ballots might more properly have been cast. My thanks are then addressed to all the members of the Bureau who have seconded me and without whose assistance I should perhaps have been unequal to my task. Thanks, finally, to all the members of the Committee and to all our adherents, who, partaking of the common burden, have considerably simplified my work. I have, perchance, committed faults and errors may have crept into the different documents which you have received, but I appeal to your indulgence knowing in advance that you will recognize that I have done my best. Here then, gentlemen, is our first International Dental Congress. Let us all hope that it will be the prelude to many others, and that 1889 a glorious anniversary, if there ever was one, may be for the dental art, that which 1789 was for our country, the era of emancipation and progress. (Applause.)

President Gariel asked the foreign delegates to take positions upon the rostrum where seats had been reserved for them, and the floor was accorded to each of them in turn.

The delegate from England first read a letter from Sir John Tomes, Honorary President of the Bureau of Great Britain.

CATERHAM, August 30, 1889.

Dear Mr. Cunningham.—In the absolute impossibility of taking part in the Congress, I would like you to express to the assembly how much I am touched by the honor they have done me in calling me to preside over the English section of the Dental Congress. Every movement which tends toward progress in the knowledge and practice of dental surgery obtains my sympathy, especially when those who take part in it with different views in regard to the means and methods most appropriate for dental instruction, unite to attain a common purpose. I am firmly convinced that every attempt to separate dental surgery from general surgery, to consider it as independent and distinct from the general subject of which it is a part, would have for a consequence the reduction of the breadth of its instruction and of the social position that dental surgery has attained.

The affirmation that the surgeon knows but little of dentistry would thus have its counterpart: the dentist would know but little perhaps of medical science. There is opportunity for bettering both sides, and an attempt to separate the branches from the common stem would be to arrest them on the way to a more extended general and special development. On this account I am sure that our profession will be better served by maintaining a dental section in an International Medical Congress, than by a special Dental Congress.

Moreover, the limitation of the subject to the narrowest confines tends to cramp the view of the practitioner and to deprive him of all idea of proportion, which would have as a consequence the debasing in the future of those who practice one branch of a subject which is divisible into many independent branches. Who can say that the teeth, the eyes, the ears, etc., are not inter-dependent parts of the human body considered as a whole? International dental congresses and dental sections in international medical congresses, cannot exist at the same time. One will rob the other of prosperity and usefulness, and personally I think that our efforts should go toward maintaining the closest possible connection between general surgery and dental surgery and, in consequence, to giving in the future as in the past, as much development as possible to dental sections in international medical congresses.

Again expressing my thanks to the Bureau of the Congress, I remain Very truly yours, JOHN TOMES.

This letter was received with applause.

Mr. Cunningham then remarked:

Gentlemen: I cannot find words to voice the sentiments that I feel in hearing my land applauded in the name of the dental profession in England, I am able to assure you that we are very grateful for your invitation. In choosing Sir John Tomes as our president, you have testified your respect for a man whose discoveries and numerous works have caused him to be decorated by the Queen, yet it is possible that the part he has played is not here well understood. It is to him that is due the actual state of advancement of the profession in our country. It is to the action of Smith and John Tomes that we owe the dentists' act of 1878, which no longer permits the exercise of dental surgery except to those duly qualified for it. Your delegates at Brighton were able to see the manner in which the name of Tomes is received among us. Unfortunately, he is unable to undertake the journey.

We are happy to participate in your work, and thank you for our reception the memory and the echo of which we will carry back with us to our country. (Repeated applause.)

Dr. Bogue, of New York, Vice-President of the Bureau of the United States, in the place of Dr. Taft, spoke as follows:

Gentlemen: I did not expect the honor that you have wished to confer upon me, and my first duty should be to thank this assembly. It is with pleasure that I see the great number of members who compose it. It also embraces many of my compatriots, and I hope they will add to your achievements. I express to you in their name the best wishes for the success of the Congress.

M. Heide, delegate from Norway, addressed the assembly in the following words:

Gentlemen: Obliged to study and to know foreign languages, I have been able to follow closely the professional literature of various countries which glory in working for the progress of humanity. In this study I have necessarily made comparisons, and I hasten to say that I have observed the important advancements carried on in France in the dental art during the past twelve years. Certainly there are distinguished masters on the other side of the Atlantic, who are remarkable among the lights of the profession, but at present our art is no longer the monopoly of any one nation, and France counts authorities who carry the scientific flag in the van. France, so intelligent, so active, so creative, cannot remain behind. A great movement has been in operation which has resulted in veritable miracles. To what do you owe this transformation ? To the socicieties which have inscribed upon their programme, "*advancement of the art;*" to the schools which are established at Paris, not only to the great profit of patients, but also to the profit of French and foreign physicians. These schools have become the centers of study whence go out, each year, students of ability and of talent. Let us add that it is to these institutions we owe the idea and execution of this rendezvous for the dentists of every land. I am of the firm conviction that this Congress will be profitable to all, and will contribute largely toward the diffusion of practical and scientific ideas. In the name of the Norwegians, my compatriots, I have the honor warmly to congratulate the Committee of Organization, and I do not hesitate to cry: *Vivent les Ecoles Dentaires de Paris! Vive la Grande nation! Vive la France!*

M. Etcheparreborda, of Buenos Ayres, delegate of the Argentine Republic, took the floor and said:

Gentlemen: The Government of the Argentine Republic appointed me its delegate, and confided to me the honor of representing it among you. I appreciate the importance of the situation, and I address to you my wishes for the success of this Congress.

Dr. Richter, of Breslau, delegate from the German-speaking countries, succeeded him, and said:

Gentlemen: In the name of the Dental Association of Germany I bring you their wishes for the success of the Congress.

Dr. Arnim-Rothmann, of Buda-Pesth, also delegate from the German-speaking countries, said:

I have come from my country to salute this great nation, and to cry: *Viva la France!*

Dr. Redard, of Geneva, delegate from Switzerland, pronounced the following discourse:

Mr. President, Ladies and Gentlemen: The 29th of June, 1883, the late M. Carteret, President of the Department of Public Instruction of the Canton of Geneva, presented to the Legislature a report upon the opportunity for the creation of a dental school. He said: "The dental school which we propose to you to-day to create at Geneva will have advantageous results. In fact, this institution, in raising the intellectual standard of the surgeon-dentist, will constitute a further safeguard for public health; moreover, it will be a new scientific establishment both useful and fruitful."

On the 6th of July the Commission appointed to examine the question, expressed itself by its mouthpiece, Dr. Vincent, at present Professor of Hygiene and Director of Public Health, as follows: "First we must applaud everything which assists in giving to the public the greatest guarantees against unsuitable persons practicing any part of the healing art, whether we have to do with physicians, dentists, or midwives. The creation of our Faculty of Medicine had, as an immediate result, the increasing of the difficulties of the examinations, that had to be undergone, and it will be the same for dentists. In giving them an opportunity to follow courses of instruction which shall enable them to thoroughly understand their art, with but slight pecuniary sacrifices as compared with those which exist elsewhere. The State will have a right to demand in the place of examinations, at present merely ludicrous, serious proofs of true capacity. It is time to close the painful list of accidents caused by the ignorance of certain so-called dentists. It is time to give to this important branch of surgery the place that it merits to occupy in school and in practice."

The law was voted without opposition. Four years passed away. German-Switzerland which did not wish to remain behind made a warm appeal to all the Swiss dentists, calling them together at Zurich. Sixty dentists responded to this appeal and organized themselves into the Swiss Odontological Society. They adopted ways and means to be employed to obtain a federal examination of dentists and to obtain from our federal authorities a recognition of dentistry as a part of the healing art. The request read at the Odontological Congress at Berne the following year was voted by acclamation and sent to the Federal Government. The request was based upon the fact that the dental art and its dependent branches offered to anatomy, to physiology, to comparative and pathological anatomy, as well as to histology and embryology, a domain as vast as specialties for any other part of the human body and mentioned the works of Loewenhock, Hunter, Purkinje, Arnold, Kölliker, Waldeyer, Goodsir, Tomes, Coleman, Heider, Wedl, Magitot, and others. We did not have to wait long for the reply, and in 1887 the Federal Chambers made a law at the request of the Odontological Society classifying the dentists in the medical category. To obtain the federal diploma of dentist it is now necessary: *First*: to show proficiency in the following branches: Latin, Greek, the mother tongue, a second Swiss national language, history and geography; mathematics, including algebra and geometry and the natural sciences. *Second*, to undergo an examination in the different natural sciences, physics, chemistry, botany, and zoology. *Third*, to undergo an examination in anatomy, physiology, histology and embryology. *Fourth*, to undergo a professional examination which shall be written, practical, and oral.

Mr. President and Gentlemen: Switzerland never shows herself indifferent to progress realized in any domain of science, or the arts. Though a little country she appreciates men who with proper purpose work to overcome charlantanism and empiricism, and it is in this light that I am sent here to work in the sessions of odontological science. I am sent to address to you wishes for success and to thank you for your kind invitation.

DISCOURSE OF M. PAEPPE OF BRUSSELLS.

Ladies and Gentlemen and Dear Colleagues: In the name of the Belgian delegation, in the name of the Odontological Society, I am happy to tell you of the interest which we bring to this International reunion and to express the gratitude which we feel to its organizers. We are convinced to-day that the dental art has need of elevation and of being dignified, and that nothing is more suitable to bring about this result than to put those who exercise our art in touch with the most recent discoveries of scientific progress which are taking place every day and in every country. Now, what can be more fitting for the accomplishment of this end than reunions such as this in which opportunity is given us to participate? What in effect is a Congress like this if it is not a mutual source of instruction where each of us come to enlighten all and to be enlightened by others? Where each comes to learn the things of which he was ignorant or which he had understood from a different point of view, and to communicate the fruits of his own experience? Here in fraternal communication we may gain strength to advance together toward all those ameliorations which our profession now requires, as much from a material point of view as from an intellectual and moral; as much from a technical as from an odontological point of view. Such an effect appears to me to be the double end, and let us hope it will be the double results of this International Dental Congress:

1. To give us more strength to conquer the remaining obstacles which are opposed to our profession receiving in society all the consideration to which it is entitled. This strength will be found in the union of all. Remember the wise device of my country: "*L' union fait la force.*" And this union may no longer, in our era, be simply national, but it must be international, for with the facility of communication and the rapid propagation of information through press and books every country which would isolate itself from others soon falls to the rear. This is as true for odontology as it is for all the other sciences. Science knows no frontiers.

2. To constitute a great mutual source of instruction not only where illustrious masters, many of whom I see about me, may communicate a little of their wisdom to confréres less well endowed or younger and open to them new horizons, but where each of us comes to set forth even the most humble discoveries that practice and study may have suggested to him. When it has to do with the relief of those who suffer, progress is an immense benefit, however little it may be. It is in this way, I think, that the organizers of this International Congress have understood their work, and I do not wish to see other proof of it than the questions that have been made the order of the day—questions which are of the highest interest, questions which encourage in some sort all those among us who have a process to communicate, an apparatus or an instrument to show, or even a simple idea to set forth, to make it the object of a communication or of a public demonstration.

It is thus, gentlemen, that progress advances and good is realized. By the labor, the study, the experience, and the observation of each day, the true and the good are little by little unveiled to the great profit of all humanity. If this is true in general theory, how much more exact is it in an art like ours which tends so strongly to decrease the sufferings of our kind and to render life more agreeable, more worthy of being lived. How many handsome faces owe us their beauty, and in consequence how many happy homes owe us the maintenance of that mutual tenderness so desirable in married life? Gargantuas or Lucullus, engaged in the pleasures of the table, owe us the brightest of their joys. And for all the world, what is fortune without health? There is no robust health without a good stomach, and no good stomach without good mastication; that is to say, without a good denture even be it artificial.

But these desirable results have not been obtained except upon the indispensable condition of all scientific progress ; *liberty*—liberty in the form of free research, of free publication, and of free communication of ideas. I think that a delegate of a country small in territory but great in its free institutions, can declare before the sons of generous France, which we love and which just now celebrates the centenary of its glorious revolution of 1789, that science in general, and medical sciences in particular, never makes serions progress except under the ægis of liberty and of fraternity. Let us then have liberal minds and fraternal hearts to enlighten and aid each other and we shall have done much, even without leaving our own sphere, for the good of our sort merely in having raised the dignity of our profession in our own eyes and in the eyes of all. Certainly it is no longer the time when the dental art was scarcely considered as forming a part of the art of healing, when *dentist* was almost always synonymous with *charlatan*, when the extractor of teeth was put upon the same plane with the pedicure, and when the ill he did was repaid him by the public with bad jokes, putting in practice that old maxim of a sage who should have been a dentist and an oculist, "an eye for an eye and a tooth for a tooth." To-day we respect a little more the denture of our kind, and they commenced to render us good returns in the form of consideration and respect, and sometimes in the form of fortune and honor. To-day it is understood that the dentist, truly worthy of the name, is not simply an extractor of teeth, but that he often cures, nearly always lessens suffering, and is the preserver of the general health and the restorer of beauty. All this thanks particularly to the progress of dental and buccal prosthesis. It is known that dentistry embraces the hygiene and the medicine of the mouth as well as operative and orthopedic dental surgery, and that different branches of our art do not yield in any particular to similar branches which have to do with other regions of the human organism. On the contrary maybe, no department of medicine and surgery advances with more surety and accomplishes more satisfactory and desirable results for each of its branches. One can frankly say that dental science during the past twelve years, far from being in the background of medicine, has grandly advanced upon the other branches of the medical art, and that the true modern dentist, a specialist, at once physician, operator and mechanician takes part, not with the laggards who follow in the midst of the baggage, but with the advanced guard of the great medical army. We have now to see to it that each of our confréres by complete theoretical and practical instruction may arrive at this desirable elevation.

Gentlemen, this betterment of our profession and the further progress which we have a right to expect, we owe in great part—and it is only right that I should here affirm it—to the grand dental schools which have been opened in the principal cities of Europe and America, and in this point of view permit me to render homage in passing to the Dental Hospital and School of Paris, and to the Odonto technique Institute of France. These two fine institutions, which already have so powerfully contributed to the betterment of our art, now prepare a young generation of dentists absolutely in touch with modern science.

In Belgium our Odontological Society in its organization has assumed the task of exactly imitating this example. To raise the standard of dental studies not only through a law which shall demand of dentists greater special capacities and more general knowledge, but the opening of an odontological school is one of the principal objects that our society has had in view. For this purpose our society has elaborated a programme of studies which has obtained the sanction of the Academy of Medicine and has been transmitted to the Government, and, according to the Ministers, will be transformed into a law at the next discussion upon the relation of academic grades. This programme, which demands four years of theoretical, practical and clinical studies, commencing with the natural sciences and including physics, chemistry, botany, zoology, surgery, and mechanical dentistry, will put the young dentist upon a plane with other physicians as regards medicine in general and will give him that special technical knowledge which is only demanded of those who devote themselves especially to the dental art; for example, the work of prosthesis.

I have the honor, gentlemen, to place upon the table copies of this programme of studies. But I repeat, that if our attempt is worth anything and if it shall attain serious results, we must trace all the merit of it to your great dental schools which have given us the example.

To conclude, dear colleagues, permit me to formulate an opinion which I shall beg the secretary to note in his report, because I shall make it the object of a formal proposition: It is that this International Dental Congress, while it is the first of the sort, may not be the last; that we decide that this Congress shall recur at fixed dates in one or another city of Europe or America, and that in the intervals our different societies shall continue to maintain from one country to another, the most friendly relations, to see if there cannot be instituted among us, as in other professions, a vast international dental federation which may perseveringly continue in a permanent manner the work of intellectual progress and moral elevation which the organizers and the members of this Congress have assumed as their mission. (Applause.)

ADDRESS OF M. RAMM.

Ladies and Gentlemen and Dear Confreres:—My compatriots and confrères here present have imposed upon me the honorable burden of repairing the involuntary fault committed by the President of the Russian Dental Society, M. Pravedny, and of thanking the President of the International Dental Congress and the Committee, for the invitation to this fete with which they have honored us. We are not yet aware of the cause for the absence of M. Pravedny, yet we are able to affirm that it is through no lack of willingness on his part. Our sympathies for France and French science are too well known for me to insist upon this point. There must have been some serious obstacle to have prevented our colleague from being present among you. A Russian proverb says: "Better late than never." I conclude then in expressing on the part of my confrères and compatriots and for myself the most lively sentiments of recognition and admiration for you, Mr. President, for the members of the committee, and for our dear confrères of France and abroad. I dare hope that our congratulations, although a little late, may be kindly received: *Vive la France! Vive la science francaise!*

REMARKS OF M. TRALLERO, OF BARCELONA.

Ladies and Gentlemen: As a representative of Spain, I salute you, Mr. President, and all my French and foreign confrères. I congratulate France for its success in this great scientific Congress, and express my wishes that in the future my compatriots may revive themselves in this fountain of science, and carry back into Spain the knowledge of which France should be proud of having acquired, thanks to the organization of its two schools and to the devotion of its corps of instructors, whom I also congratulate. I would like to see in Madrid a similar organization and disinterestedness in dental science, in order to be able to offer to the organizing members of this Congress, and to all dentists, a scientific fete such as now unites us here. I conclude in saying: *Vive cette source de science! Vive la France que je cheris!*

Mr. Bensow, delegate from Sweden, expressed himself in these terms:

Gentlemen: In the name of the Scandinavian Dental Society, I have the pleasure and honor of thanking you for being invited to participate in this Congress. I have already taken part in many dental congresses, no one of which has been equal to this, and it is not astonishing, since France, which always marches at the head of progress, has organized it.

Dr. Amoedo, delegate of the Odontological Society of Havana, said:

The Odontological Society of Havana has charged me to represent it among you. I congratulate you upon your enterprise, and express my wishes for your success.

The session was closed at 11 o'clock.

SUMMARY OF THE WORK OF THE FIRST SECTION.

Normal and Pathological Anatomy and Physiology.

The Commission of Organization of the Congress made the following questions the order of the day:

1. Teeth according to race.
2. The role of micro-organisms in dental and buccal pathogenesis.

3. The influence of nutrition in the production and in the cure of dental caries.
4. Dental and buccal classification and terminology.

These questions were considered in the sessions of Tuesday and Wednesday, September 3d and 4th.

Dr. Gaillard, President, and M. Poinsot and Saussine, Vice-Presidents, presiding.

M. Arnim-Rothmann, of Buda-Pesth, read a communication upon the

PATHO-HISTOLOGY OF THE PULP AND THE PERIOSTEUM.

The author in the following manner established a classification which he demonstrated by microscopical preparations placed at the disposition of the members of the Congress after the session.

1. Pulpitis acuta partialis.
2. Pulpitis acuta partialis purulenta (p. acuta ulcerosa).
3. Pulpitis acuta totalis.
4. Pulpitis acuta totalis purulenta.

In the first group M. Rothmann pointed out the slight effect of the affection with the possibility of hermorrhage, and indicated further that the seat of the pulp disease is not always related to the lesion of the enamel as in a case of caries of the triturating face of the tooth, the location of the pulpitis was near the neck of the organ. In another case there were two seats of inflammation. The second division is characterized by ulceration at the center of the pulp and the presence of pus.

The third category, pulpitis acuta totalis, is distinguished from the first by the fact that all the pulp is affected, and that the pathological manifestations vary according to the duration and initial cause.

M. Rothmann here established sub-divisions, such as pulpitis acuta traumatica, which also presents varieties in keeping with the time which separates the traumatism from the microscopical examination of the pulp; and pulpitis chronica parenchymatosa, which is characterized by chronic hyperæsthesia with hyperplasia of tissues. Another variety resembles hyperæmia pulpæ of Dr. Black. Pulpitis chronica totalis purulenta is characterized by pus forming in the center of the organ and then extending toward the periphery.

M. Rothmann summed up as follows: It is of the highest interest to clearly distinguish between the four forms of pulpitis.

In the first instance we have an inflammation which commences under the odontoblastic layer and extends only over a slight radius. This inflammation is characterized by cellular infiltration and is probably caused by microbes.

The second form is an ulcerative process which also destroys the odontoblastic layers, and according to the intensity and the duration of the disease extends more or less deeply into the layers of the tissue of the pulp. If the disease last a long time it becomes similar to the ulcerative form of pulpitis acuta totalis.

The third division pulpitis chronica totalis purulenta, is a chronic process which commences in the center of the pulp and slowly extends quite to the periphery.

This communication was received with applause.

DISCUSSION.

Dr. Iszlai, of Buda-Pesth : In the matter of classification in the natural sciences it is requisite to hold rigorously to some general principles relative to antagonisms and analogies. This is notably so in the study of bacteria, and M. Rothmann not having made this a subject of special investigation we cannot admit his classification without reserve.

Dr. Rothmann: It is possible that M. Iszlai does not see the full utility of my classification. I was in the same way of thinking when I studied botany, and the classes and numerous subdivisions of Linneus were obscure to me. It is not my fault that the pulp and radiculo-dental membrane have so many diseases causing characteristic changes which the microscope can determine. If M. Iszlai had examined my microscopical preparations he would not have raised this criticism.

M. Poinsot read a communication upon

FRENCH TEETH FROM THE CEMETERY OF HERMES (DEPARTMENT OISE).

The author of this communication had received from Dr. Baudon, of Mouy, thirty-one teeth coming from the above mentioned cemetery, the antiquity of which is not to be doubted. These teeth are divided as follows: Eight superior molars, eight inferior molars, ten inferior and superior cuspids, one superior pre-molar, one inferior pre-molar, two inferior permanent incisors, one temporary cuspid.

The author carefully studied these groups of teeth separately and together. The superior molars present, one of them four roots, three others deep grooves upon the palatine and antero-external roots. A fifth tooth, which is a first molar belonging to a young subject, has ill-developed roots. The others are wisdom teeth. The inferior molars are more interesting in regard to nutrition. They present certain diseased conditions, such as erosion, caries, absorption, and exostosis. The grooves upon the roots are sufficiently well marked, but there is no anomaly of number in this respect. The group of canines present two teeth absolutely bifid in the root, and five others having well marked grooves indicating an incomplete bifid state. The single superior pre-molar of the collection possesses three distinct roots disposed like those of molars.

In the other groups M. Poinsot points out also upon the roots the presence of well marked grooves, and terminated his interesting communication by the following summary:

In the entire number of thirty-one teeth found in the trenches of Hermes, we noted five inferior canines more or less bifid; one superior pre-molar with triple roots; ten molars possessing a supplementary root, or indications of supplementary roots as compared with the teeth of our contemporaries.

M. Dubois read a communication in regard to the

TEETH OF THE FRENCH.

The orator pointed out first of all the relative concordance of the statistics which he had drawn up with those formerly made by Boudin for the periods of 1831 to 1849 inclusive, and by Chervin 1850 to 1869, and showed the constancy of the phenomena observed in spite of the different manners in which the figures were obtained and the different periods over which they extended.

In studying the geographical distribution of edentates one comes to the first conclusion that they are not scattered hap-hazard, but according to certain knowable laws the existence of which is evident.

He passed in review different possible causes showing the distribution figured upon the map of France, and after having established the fact that latitude and altitude, hydrography, the geological constitution of soil, alimentation, habitual drinks and civilization could not be invoked as essential or important causes for this condition, he advocated the hypothesis of Magitot in regard to the ethnic influence. The author then gave some points in regard to the ethnography of France as constituted by three principal groups—the Celts, Kymris, and the Ibero-Ligures, then studying each of these groups separately, and comparing them with the number exempted from military duty on account of bad dentures, he showed the relation of these facts to the ethnic hypothesis, principally in regard to the Department of Deux-Sevres, which constitutes an anomaly in the midst of its immediate neighbors—an anomaly which cannot be accounted for by the location, but which the origin of the race perfectly explains.

In closing, M. Dubois said that he thought it useful to communicate a *resumé* of his work to the congress in order to point out to his confrères in the provinces and abroad the great importance of the question. If the provincial dentists wished to make an examination of the subject over territories less vast than France—for example, to take their Departments as the object of a special study by drawing up statistics for the Canton, the problem of the etiology of dental caries still obscure, would draw near to a solution. French dentists might do themselves the honor of undertaking one of the greatest subjects which it was permitted them to treat, and they might bring to general science in this way an important contribution, for the question admits not only an extensive knowledge of the dental system, but even of the sources of life itself.

He concluded in these words: "We shall be equally happy should foreign dentists desire to communicate to us what is the state of affairs in this regard in their countries. We might thus together in a few years accomplish a work which would profit all, both scientists and dentists."

DISCUSSION.

DR. DUNOGIER, of Bergerac, asked M. Dubois if the Druidic stones are not the work of the Kymris, for inasmuch as they are found particularly in Britain, this would seem to weaken the theories propounded.

M. DUBOIS: The Druidic monuments and megoliths are usually found in Celtic and not in Kymric countries.

M. THUILLIER, of Rouen: I am in accord with M. Dubois as far as Normandy is concerned, and I have many times noticed complete destruction of superior teeth in young girls from 15 to 18 years of age.

M. GODON, of Paris, pointed out the local differences which exist between the map of dental caries in France published by Magitot in 1867, and that of M. Dubois, the first being based upon the military exemptions from 1831 to 1849.

DR. GAILLARD: M. Magitot made use of a thesis already published at that time.

M. DUBOIS: M. Magitot depended upon the work of Boudin, published in 1857, and borrowed his figures. Chervin has studied a period much nearer to us. Although he established his statistics in a little different manner from mine, our proportions are very slightly unequal. This is a guarantee of exactness. The discrepancy between Boudin on the one hand, Chervin and myself on the other, relates principally to Dordogne, but upon this point Boudin and consequently Magitot, have committed an evident error.

Dr. Dunogier: M. Dubois has said that it was requisite to go back to the Celts and to the Kymris to discover the ethnic origin of the French. Now, historians are not yet determined in regard to these two peoples, and Bouilhet, in his dictionary, makes but slight difference between them in regard to their origin.

M. Dubois: I am a little astonished at the criticism of Dr. Dunogier, especially if he has no other authority with which to oppose me than that of the Dictionary of Bouilhet. You may believe me that I have not drawn any data upon this question from my own sources. I have spoken in accordance with Broca and Lagneau, and you may satisfy yourselves whether their dicta are in opposition to that which I have set forth.

Dr. Gaillard: We shall not be able to completely clear up this question, and the military exemptions on this account are becoming more rare, because the races are mingling more and more. I think M. Dubois has not given sufficient weight to civilization, which is an important causal element in this condition.

M. Godon: The department of the Seine (Paris) occupies a good rank in M. Dubois' statistics.

M. Poinsot read to the assembly a communication upon

MICROZYMES AND THE CADAVERIC ALKALOIDS,

which he concluded as follows: "Employ in dental therapeutics only those products which permit preservation of the living tissues, and remove from the mouth all tissues invaded by pathogenic microbes, as well as those which possess any form of cadaveric alkaloid."

The same author then read a paper upon "THE ACCIDENTS PRODUCED BY DEAD TEETH IN THE MOUTH." He said the presence in the mouth of dead teeth ought always to be considered as warranting a grave prognosis. He then insisted upon general diatheses as determining causes of pathological significance in regard to the dental system, and further insisted upon the fact that besides caries they might produce death of the teeth. It is important to determine the cause of death, which might come from many sources, from general causes, from traumatism, dependent upon faulty articulation and the evolution of the wisdom tooth, from defective prosthetic apparatus, from rapid straightening or vigorous separation of the teeth. The traumatic causes usually have not a grave significance; but it is not the same for the others, in which bacteria and cadaveric alkaloids play an important role by their diffusion.

M. Poinsot terminated his communication by formulating an opinion that in important medical consultations the dentist should be consulted in regard to the state of the mouth and the teeth of the patients, in order to aid in the diagnosis and to facilitate prognosis. General and special therapeutics will thus conform more closely to the interests of the patients and of science.

M. GROSHEINTZ read a communication in regard to DENTAL STENOGRAPHY. The author proposed to represent the teeth by the first letter of the Latin names, employing for the bicuspids a large B for the first and a small b for the second, and the same for the incisors. Two characters, one horizontal, and the other oblique above or below would serve to designate by the opening angle, the right or left side, and by the superior or inferior position of the oblique line which of the jaws possessed the teeth thus noted. Diseased teeth are designated in the same fashion by the addition of a small d, then by the aid of the figures 1, 2, 3, 4 placed according to the case after the denominating letter, one can indicate the degree of the disease. The surfaces affected by the caries might also be designated by the letters v (vestibular), l (lingual), m (median), d (distal), t (triturating, etc. When a root is in question the letter r is sufficient to indicate it.

Finally the author brought forward a series of abbreviations to designate the disease, the dressings, and the substances employed in the fillings.

M. DUBOIS desired that dentists should take under consideration a system of professional abbreviations, but he preferred figures in place of letters. He had published an essay upon the subject, but thought it belonged to a commission to examine and pass upon the matter.

M. SCHWARTZ, of Nimes: One might commence on the lower molar, for example, with No. 1, and terminate with the last one above by the No. 20, 24, 28 or 32, according to the case.

M. TRALLERO asked for the appointment of a commission to examine into the question.

M. CUNNINGHAM, of Cambridge, thought that there was need of a system and he had presented one, but he was of the opinion that it was only necessary to study dental stenography for office practice and clinical work.

He placed upon the table of the Congress a copy of his mouth chart which he required his students to study, and which is adopted in England.

THE PRESIDENT put the proposition of M. Trallero to a vote and appointed MM. Dubois, Cunningham, Grosheintz, Schwartz and Trallero.

M. GODON proposed that the commissioners submit their report at the Friday session of September 6th. Adopted.

M. DUBOIS presented a work upon TERMINOLOGY AND CLASSIFICATION OF THE PRINCIPAL AFFECTIONS OF THE TEETH AND OF THE MOUTH.

M. CHAUVIN then read the conclusions of a work made in common with M. Papot, in regard to INFLAMMATION OF THE GUMS WITH AN ATTEMPT AT CLASSIFICATION, THE RATIONAL THERAPEUTICS AND THE PATHOLOGICAL SIGNIFICANCE.

1. That inflammation of the gum, except of a toxic and specific sort, is always the consequence of a traumatic cause. That in this variety nearly the uniform cause of traumatism is due to the action of tartar, and that the gravity of the disease depends exactly upon the manner in which it is deposited. We would remark that forms of slow evolution of medium intensity, or scarcely marked forms, are often provoked by regularly and superficially placed depots of concretion. That, on the contrary, inflammations of rapid development present symptoms of same gravity that are always provoked by deposits deeply placed and irregularly situated upon the cement. That this irregularity and the rugosities which are the consequence of it explain the continual traumatism, the wounds produced upon the gum and the death of the soft tissues always observed in grave cases. That the gum is irritated in its deep portions in proportion as it remains in continual contact with the irritating agent and the source of traumatism, and that it may thus undergo all the transformations from the most benign to the most serious form.

2. That the appearance of toxic and specific inflammations of the gums may be often provoked and may take on the gravest character owing to the presence of tartar and so easily pass from a supportable chonic condition to a frankly acute stage. Further in some cases of toxic inflammation of the gums, for example mercurial gingivitis, such patient apart from all question of idiosyncrasy, will tolerate without accident a dose of drugs which would provoke toxic inflammation if he were not under the preëxisting influence of the gingivitis.

3. That the pathological consequences of gingivitis may be of the greatest gravity as regards the general health of the patient, and may even at times bring about a fatal termination, as is proven by the cases we cite, and which are not the only ones we have observed.

4. That treatment should be first surgical, that it is the exclusive province of the dentist, who ought before all other treatment to practice minute cleansing of the teeth at many sittings if necessary, and assure himself that no particles of tartar have remained upon the teeth and the gums to play the role of inflammatory irritants. That the surgical treatment in cases of need, be destructive. For instance, the employment of the thermo or galvanic-cautery in spongy and hypertrophic gums. That the physician consulted in cases of gingivitis should, even when the inflammation is the consequence of a diathetic state or of toxic medication, counsel his patient to have recourse to the dentist to facilitate by the local healing the effects of general medication.

5. That the medical treatment should always be antiseptic. In fact, continual irritation and traumatism bring about sphacelus of the soft tissues, osteitis and sometimes necrosis. Mortification of the tissues and the decomposition of organic substances and detritus render the buccal cavity septic in the highest degree.

DISCUSSION.

M. Dubois: I am not entirely of the opinion of MM. Chauvin and Papot in regard to the etiology of gingivitis. It does not follow that tartar is always present in gingivitis, and that it aggravates all forms, or that we should attribute to it the origin of the trouble. Gingival inflammation is associated with defective mastication and we know how often when trituration is not made upon any point tartar is there deposited. It is, therefore, often a secondary phenomenon and not the constantly initial fact.

(TO BE CONTINUED.)

TENTH INTERNATIONAL MEDICAL CONGRESS, BERLIN, 1890.

RULES OF ORGANIZATION.

I. The sessions of the tenth International Medical Congress will be opened in Berlin, Monday, August 4, 1890, and will close on Sunday, August 10, 1890.

II. The membership of the Congress is made up of legally qualified* medical men, who are registered and have obtained their card of admission. Other scientists who are interested in the work of the Congress may be admitted to associate membership.** The participants pay a registration fee of $5. They receive a copy of the transactions as soon as published. Registration should be made at the commencement of the meeting. Persons may also register previous to the meeting by sending the registration fee, their name, stating the position they hold and the place of residence.

III. The objects of the congress are for purely scientific purposes.

IV. The work of the congress is distributed in eighteen sections. At the time of registration, persons should designate the section or sections of which they wish to become members.

V. The committee on organization will conduct the election of permanent officers, which shall consist of a president, three vice-presidents, and of an indefinite number of honorary presidents and secretaries.

The various sections will elect their officers, consisting of a president and a sufficient number of honorary presidents. The latter are to conduct the sessions of the sections in conjunction with the president. For the reason that a number of different languages are official, it will be necessary to select a suitable number of secretaries from among the foreign delegates. Their duties are confined to the sessions of the congress.

After the close of the Congress the transactions are to be published by an editorial committee especially appointed for the purpose.

VI. Sessions of the Congress and of the separate sections (to be announced later).

VII. The general sessions are: (*a*) For the transaction of business relating to the general affairs of the Congress. (*b*) For papers and communications of general interest.

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* Approbirte.

** The statement that dentists who are not medical men could not become members of the Congress is based on some error, as it will be seen that they, as well as other scientific men, can be admitted to associate membership.

VIII. Transactions of the sections (to be announced later).

IX. Papers will be read at the regular general sessions as well as at special regular sessions, if any are held, by those only who have been selected for this purpose by the committee on organization. Suggestions relating to the prospective work of the Congress should be in the hands of the committee on organization on or before July 1, 1890. The latter will decide whether the suggestions should be accepted or acted upon.

X. All essays, papers or communications read before the general sessions or the various sections, must be delivered in writing to the respective secretaries at the close of each session.

The committee on publication decides whether papers shall be published, whole or in part, or at all.

Members who take part in the discussions are requested to give the secretaries a written copy of their remarks before the close of each day

XI. The official language of the Congress is German, French and English. The rules as well as the programs and daily announcements will be published in all three languages. It is permissible for members to avail themselves of any other language, for the purpose of making brief remarks, provided some one is present to translate them into one of the official languages of the Congress.

XII. Papers read before the sections are as a rule limited to twenty minutes. While speakers during discussion are limited to ten minutes each.

XIII. The presiding officer conducts the session according to the usual parliamentary rules governing the holding of similar meetings.

XIV. Students of medicine and others, ladies or gentlemen, who are not physicians, but who take special interest in the proceedings of the various sections, may be invited by the presiding officer, or be permitted on application, to attend the sessions as visitors.

XV. Communications or requests for information relating to any one section should be addressed to the president thereof. Send other communications or apply for information to the general secretary, Dr. Lassar, Karlstrasse 19, Berlin, N. W., Germany.

The committee of organization of Section 14, Dental and Oral Surgery, consists of the following named gentlemen: Dr. Busch, Berlin, secretary; MM. Calais, of Hamburg; Hesse, of Leipsig; Fricke, of Kiel; Hollaender, of Halle; Miller, of Berlin; Paetsch of Breslau; Sauer, of Berlin, and Weil of Munich.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science.

PUBLISHED MONTHLY.

EDITOR: A. W. HARLAN, M.D., D.D.S.,

ASSOCIATE EDITORS:

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TRANSMISSION OF SYPHILIS.

At a recent meeting of the Academy of Medicine, Paris, two cases of the transmission of Syphilis by contaminated instruments were reported by M. Lancereaux, one occurring at the hands of a physician and the other in the practice of a dentist. In both cases the contamination was due to unclean instruments that had been previously used on syphilitics.

The *Medical News*, in discussing these cases, editorially, says:

* * *

"And certain dental procedures, such as transplantation of teeth, etc, etc., have been held to answer for the mischief on more than one occasion.

Recognizing as fertile sources of syphilitic contagion the mouth, the throat and the nasal cavities—each and all of them so commonly presenting contagious lesions of the disease—it is incumbent upon all who deal with the affections of these parts, and upon dentists as well, that they should appreciate the risk they run of inoculating healthy patients with instruments employed in the treatment of syphilitics, and should take the most minute precautions to avert such calamities. Of what are these precautions to consist? One, which is obvious, is that an instrument used for treating or making applications to a syphilitic should never again be used upon any one else except another syphilitic; this, of course, is a certain safeguard, but may not, unfortunately, be invariably applicable. Another consists in thoroughly cleansing, and sterilizing by means of antiseptic solutions, each instrument every time it is used, with just the same care and precision which surgeons exercise with their instruments. M. Lancereaux demands that dentists should be compelled to employ "only instruments rigorously clean, and as it would be impossible for them to have special instruments for each of their patients, one should see that there are at the establishment of every dentist disinfectant solutions, and above all, that they make use of them." This stringent rule is also, he says, to be applied to hairdressers.

A question not inaptly suggested by M. Magitot, in discussing M. Lancereaux's remarks, is whether it would be safe to trust in non-professional hands considerable quantities of antiseptics, notably the most trustworthy one, bichloride of mercury. We can see no reason why dentists should not be as capable of exercising the care necessary in handling these poisonous substances as physicians, if the instruction they receive in chemistry and materia medica counts for anything at all, and if a clear comprehension of the principles of antiseptic methods is exacted of them before graduation.

A more important consideration than this, is whether or not a dentist should be expected to be able to recognize syphilitic lesions in the mouth when he sees them. To this we unhesitatingly answer that he should. Encounter them he must, for syphilis is a widespread disease, and its lesions in the mouth are among the most frequent, and at times the most intractable of its manifestations. With any reasonable amount of information upon the subject, he would, in the majority of cases, find no difficulty in recognizing these lesions, and would be at once on his guard against contaminating his instruments, or having used them, would spare no pains to render them harmless before again calling them into service."

The question of using the utmost care in cleansing instruments, and immersing them in antiseptic solutions forces itself upon us in all cases, whether it be suspected by the operator that his patient is a syphilitic or not. Dentists, are daily using forceps, scalers, excavators, probes, lancets, burs, drills, elevators, clamps, and last but not least the rubber-dam in the mouths of patients. If these be not cleansed and disinfected, what certainty is there that an innocent person will not be inoculated with this dreaded constitutional disease? We have earnestly advocated, for years past, the sterilization of instruments, *all instruments* used in contact with the skin or mucous membrane, or in the roots of teeth, or the so-called pyorrhœa pockets. Any dentist can be provided with the means of disinfection so easily that there will be no cause for fear of future trouble.

℞	Resorcin	gr. x
	Water	minims xc

or,

℞	Bichloride of mercury	gr. iij
	Hydrogen di-oxide	℥ v
	Water	℥ vi

or,

℞	Beta-Naphthol	gr. xl
	Water	℥ xv

or if carbolic acid is desired as an ingredient of a disinfecting solution:

℞	Carbolic acid	gr. lvvii
	Resorcin	gr. xxxiii
	Water	℥ xii

This may be further diluted three times with water, and it will still be effective. *Be sure to cleanse and disinfect your instruments to-day.*

Local Societies.

We are heartily in favor of supporting local dental societies. The local society is the post-graduate school for many dentists, and it is the training school for members of state and national organizations. Members of the larger bodies should not lose their interest, or cease active work in local societies after the attainment of membership in the national society. At the late meeting of the American Dental Association, several of the members became unduly heated in their remarks when it was proposed to adopt the following amendment to the Constitution: "Any permanent member of this association losing his membership in his local dental society from any cause, shall, from that date, cease to be a member of this association." The Constitution of the American Dental Association provides already that a member shall forfeit his membership after expulsion from *any* local dental society. If, however, he ceases to be a member of any or all local societies for other reasons, he still retains his connection with the organization that first received him as a delegate. It is true that he may be tried by the national body for violation of the code of ethics, but we think that it is no part or should be no part of the duty of the national organization to deal with violations of the code of ethics. The association was not formed for that kind of work, and should refuse to engage in it. Cases of this kind should be referred back to the society which first sent the offender as a delegate. By refusal to adopt the above resolution or its equivalent, the American Dental Association gave a slap direct at local societies. In other words, it refused to support local societies. Now, the very life of the American Dental Association is dependent on the coöperation of local dental societies. It should be in the attitude of fostering local dental organizations. Delegates from local societies keep up the membership, enhance the interest of its meetings, and supply brains and sinews of war for its perpetuation. A member of the American Dental Association who so far loses his interest in his local society or State society should have no voice in the conduct of the business of the Association. Membership in a local or state society (both being used in the sense of being local) should be a pre-requisite for continuous membership in the national body. A permanent member, without connection in a local society, is practically a dead member, as he has no constituency; he cannot speak for any one but himself, and frequently it is only his own selfish interests that he will most ardently support.

Attention is called to this matter now, so that a few gentlemen who have no constituency may acquire one before the next meeting of the Association, and also in the hope that the Association will rectify the error made at Saratoga in not providing for this much-needed amendment to the Constitution.

FOREIGN CORRESPONDENCE.

Letter from London.

To the Editor of the Dental Review:

Sir: A subject that has of late been attracting some attention in England, is, whether a man is *more* or *less* a dentist because he thoroughly understands the minutiae of dental mechanics, and manipulative detail, and is not ashamed of the fact; or whether his professional status depends most upon his scientific pretentions, and his capacity for impressing his supposed profundity upon his professional brethern and the public.

I think the same erroneous idea pervades a large portion of the profession here, the same at it does in the United States; that it is gracious condescension on their part to give even a passing notice to the underlying principles of their calling, in the haste of their unseemly scramble after professional-political preferment, that should only be the reward of honest and thorough work. If those who have been, and those who are now engaged in the endeavor to divorce the dual components of our profession, would only stop and think what an absurd figure they cut, and the untenable position they occupy, they would not for one moment advocate a course that has neither logic to back its argument, nor reason whereon to base its proposition.

I can speak positively of those in the United States who have advocated the dismemberment of the dental course in favor of theories, and operative development; these men are not, and never were, leaders in either the operative or prosthetic branches of their calling, but on account of a preferential position incidental to the long-following—and I may add, they are still following, although a long way in the rear—of their profession, and the gracious indifference of proverbially good natured associates, they have felt themselve called upon to attempt to direct modern thought and ideas in a manner that is positively refreshing. One thing I would have those who are making such a dead set against mechanical instruction in our institutions remember, it is to mechanical dentistry, and to that alone, that they owe their present position. The foregoing applies with equal emphasis to the profession in England. This being so, have not the younger members of the profession, and the students of to-day a right to ask these would-be reformers for their credentials, ere they be allowed to dabble and dictate in matters, with which, by nature they are illy adapted.

Lecturers and instructors in both the operating rooms and laboratories of our dental colleges are too apathetic as to the important part their teachings play in their pupils' futures. A thorough knowledge of chemical physics, physics proper, and mechanical principles generally will do more, from the exactness engendered by their study, toward cultivating the mind for analyzing phenomena of any kind, and a capacity for developing resource, than all the mooted theories extant. Science is exact; theory, with which may be coupled practice, in the abstract, is empirical, the one stands to-day as it did from the beginning of time, the other, in the light of present advancement may be considered quite right to-day, to-morrow it may be proven we have been altogether wrong.

Gravitation always was a force, although unknown till Newton's discovery. Electricity in like manner existed, but its potentiality was not dreamed of till Franklin harnessed it. So it has been with many of our operative procedures; the means have existed, but we have failed to appreciate or apply them; principles have been lying dormant, awaiting the genius to utilize them, eventuating in discoveries that have been far-reaching in their collateral influences. I would like to inquire, how many of our methods of practice have remained unchanged during the past twenty years? In the natural course of events this must be so; nature's laws are immutable; theories are finite; and the sooner these facts strike home and impress their importance upon our instructors, the sooner we shall have a more intelligent appreciation of the mutual dependence one branch of our calling has upon the other.

In the inane attempts of a few misguided ones to seek recognition by, and tack themselves upon the tail of a kindred profession, they have not added one inch to their professional stature, nor best conserved the interests they should have jealously guarded.

A dentist may, and should be, a thoroughly cultured scientist, well grounded in all that pertains directly and collaterally to the requirements of his vocation; but this should not promote the illusion that too many suffer from, that they must be fully recognized as medical men. The laws of all civilized countries, where there is any law at all bearing upon the case, differentiate as to the two professions; and while a good dentist would make a good surgeon or doctor, the reverse of this is very generally conceded to be far from true; therefore, let those who are clamoring for a chimerical recognition relinquish the calling they have hardly succeeded in adorning by their presence, and whose prominence can only be accounted for by the absorbed rays of professional contact. Dentistry is without doubt a specialty of the healing art, and as such it possesses the proud distinction of having, within the memory of living men, evolved its present enviable position, developed its literature, which is the peer of that of any art or science, its instructors and exponents, who, for skill, learning and capacity, rank with the foremost of any calling of the age.

I ask, in all earnestness, if the field of the dentist is a limited one, or does it not possess an horizon of boundless possibilities? Therefore, is it not incumbent upon its members to push on with renewed energy to the greater perfection of all that will contribute to the ultimate success of our calling, instead of wasting time in considering side issues whose delusive tinsel is a poor equivalent for the efforts expended in its attainment, and a very questionable compliment to the mental capacity of its possible recipients.

Yours truly, W. MITCHELL.

LONDON, England.

REVIEWS AND ABSTRACTS.

A TEXT BOOK OF MATERIA MEDICA, PHARMACOLOGY AND SPECIAL THERAPEUTICS, with many new remedies of late introduction. Designed as a text book for the student and as a ready reference for the practitioner. A compend of materia medica written with especial reference to the more direct or positive action of medicines and the introduction of new ones by I. J. M. Goss, A. M., M. D., Marietta, Ga., former Professor of Materia Medica, now Professor of the Practice of Medicine in the College of Eclectic Medicine and Surgery, Atlanta, Ga., etc., etc. Second edition, 8vo, 586 pages. Revised by the author, Chicago: W. T. Keener, 96 Washington Street, 1889. Price, $5.00.

This second edition of Materia Medica, by the well known eclectic writer, is greatly enlarged and in many respects much improved. Typographically considered, there is nothing to be desired. It is up to the usual excellence of the publications of the well known Chicago publisher. Special attention is given in this volume to the physiological and therapeutic action of the most essential remedies. Many of the more recently discovered remedies are given a place in the volume. The arrangement followed throughout the work of grouping together remedies according to their physiological and therapeutic action, is a good one, and will be much appreciated by the practicing physician, while the index enables one to find description of any of the remedies treated in the book. To the general practitioner and the student this volume ought to be very useful.

PRACTICAL NOTES.

TACT; AN ESSENTIAL ELEMENT OF SUCCESS.

The success of the individual as a member of a community depends upon his formulating a plan of action and then drawing upon the intellectual and material resources of others to aid him in the accomplishment of his purpose.

In larger affairs this is readily recognized, but in the smaller details of every day life, the necessity of having the good will and kindly feeling of those about us is often disregarded.

There is no such thing as independence ; no man in any community lives without more or less dependence upon his fellow man. The laborer who is dependent upon his employer for the day's work which is to give him his daily bread, is a very plain example of dependence ; on the other hand, the millionaire employer is equally dependent upon the subordinates who execute his plans.

The most independent man I ever heard of was Robinson Crusoe on the island before he got his man, Friday. Before Friday came he had no human being to consult, plan, or think for ; afterward all was changed, and the man Friday entered into all Crusoe's plans and occupations.

Often those with the strongest desire to make themselves pleasant and agreeable to others, fail because nature has not endowed them with the grace of tact. Sometimes the *effort* to be agreeable is so apparent that it becomes really offensive. Blest are they to whom is given this quality in good measure.

It does not prove insincerity to say a pleasant thing instead of an unpleasant one, when the choice is open. It is unnecessary to talk to one whose ancestor was hung, about criminal law or executions; nor is it wise to talk to a very plain lady about the great beauty of her neighbor.

To the dentist, tact is a great importance. He comes into such personal relationship with his patients that all those indefinable influences of manner and language have a great effect in attraction or repulsion.

Unfortunately, it is impossible to give rules by which this faculty may be acquired. The most that can be done is to call attention to the necessity for its exercise. A natural desire to please is the best guide to it, and the cultivation of kindly feelings toward all, and a disposition to see the best side of every one, are the best conditions for its growth. A sincere interest in the welfare of the patient which, at least for the time, does not consider the financial reward is an indispensable condition.

Most of us could name dentists who are excellent operators, who, by a brusqueness of manner, repel patients and keep their business in much narrower limits than their reputation for skill would warrant. If all the good operators were coarse and disagreeable in their manner, and all the pleasant and agreeable ones were unskillful and professional failures, we should doubtless submit to the disagreeable for the sake of perfect work. But a coarse manner is no guarantee of skill, and it is quite easy to find good operators who attract rather than repel their patients. NEMO.

MEMORANDA.

Dr. J. F. Marriner, formerly of Ottawa, Ill., has located in Chicago.

Dr. C. A. Kitchen has been reappointed a member of the State Board of Dental Examiners by the Governor of Illinois.

The Chicago Dental Society will hold a clinic the first Tuesday in February, 1890, and give a dinner the evening of the same day.

Dr. H. J. McKellops, of St. Louis, attended the annual dinner of the Odontological society, in November. The dinner was tendered the society by its retiring president, Dr. Wassall.

Any member of the First International Dental Congress who failed to receive the commemorative medal can procure one by writing to the secretary, M. Pourchet, 3 Rue d'L'Abbaye, Paris.

Two papers will be read at the January meeting of the Chicago Dental Society, one on "Putrefaction" and the other on "Pus." We hope to see a number of visitors and a full attendance of the members.

A Medical and Dental Society combined was formed at South Chicago in November. All reputable physicians and dentists residing in the suburbs contiguous to South Chicago are eligible for membership.

The Record, the organ of the students society of the N. Y. College of Dentistry has entered on its second year with Franklin N. Davenport as editor. Price $1, for six months. *The Record* is the only dental journal published by students in the world.

Dr. Truman W. Brophy has been in California since the last of September in search of health. At the present writing he is somewhat better than when he went away. Dr. Thos. L. Gilmer, formerly of Quincy, is temporarily doing duty in his stead in the Dental College.

The first District Dental Society of the State of New York will hold its twenty-first (21st) anniversary, January 14, 15 and 16, 1890, on which occasion papers will be read by Eugene S. Talbot, M. D., D. D. S., of Chicago, Ill,; Geo, S. Allan, D. D. S., New York City; and another, the joint production of Drs. Edwin T. Darby and Edward C. Kirk, of Philadelphia. The following is the list of Clinicians: Dr. T. H. Parramore, Hampton, Va.; Dr. George Eubank, Birmingham, Ala.; Dr. D. Stewart Arnold, Anniston, Ala.; Dr. T. S. Waters, Baltimore, Md.; Dr. Frank B. Darby, Elmira, N. Y.; Dr. F. T. Van Woert, Brooklyn, N. Y.; Dr. H. A. Parr, New York City.; Dr. C. S. Stockton, Newark, N. J.; Dr. A.W. Harlan, Chicago, Ill.; Dr. S. C. G. Watkins, Montclair, N. J.; Dr. T. D. Shumway, Plymouth, Mass.; Dr. J. H. Kimball, New York City.; Dr. W. R. Clifton, Waco, Tex.; Dr. M. A. Bland, Charlotte, N. C.; Dr. Geo. W. McElhaney, Columbus, Ga.; Dr. Geo. H. Wells, Augusta, Ga.; Dr. George H. Winkler, New York City.; Dr. H. H. Sisson, New York City; Dr. W. H. Dwinelle, New York City; Dr. E. Parmly Brown, New York City; Dr. R. Ottolengui, New York City; Dr. George Evans, New York City; Dr. J. S. Campbell, London, England; Dr. J. N. Farrar, New York City; Dr. Thomas T. Moore, Columbia, S. C.; Dr. R. B. Adair, Gainesville, Ga.; Dr. E. P. Wright, Richmond, Va.; Dr. C. A. Timme, New York City; Dr. E. T. Starr, Philadelphia, Pa.; Dr. J. L. Gish, Jackson, Mich.; Dr. F. E. Howard, Buffalo, N. Y.; Dr. G. L. Curtis, Syracuse, N. Y.; Dr. A. H. Stoddard, Boston, Mass.; Dr. Calvin S. Case, Jackson, Mich.; Dr. W. B. Ames, Chicago, Ill.; Dr. J. E. Waitt, Boston, Mass.; Dr. A. Retter, Utica, N. Y.; Dr. James A. Swasey, Chicago, Ill.

Papers will be read on the evenings of the 14th, 15th and 16th, at Masonic Temple, Twenty-third street and Sixth avenue (6th), and the clinics will be given at the New York College of Dentistry, Second avenue and Twenty-third street, on the 15th and 16th, at 9 o'clock sharp. Special railroad and hotel rates have been made, which will appear in the official programme. Railroad rates are only for dentists and their families attending this anniversary, and will not be signed by the chairman of that committee unless vouched for. The reason for this is that we have had to guarantee to the Trunk Line Association to pay full fare for all tickets left in the hands of scalpers and second-class agents. Any information can be had by applying to Dr. W. W. WALKER, Chairman Executive Committee, 67 West Ninth Street, New York City.

NATIONAL ASSOCIATION OF DENTAL FACULTIES, SPECIAL NOTICE.—The resignation and removal to Paris, France, of Dr. Junius E. Cravens, has made necessary the appointment of a secretary to fill this position. On the recommendation of the Executive Committee, I have appointed Dr. John S. Marshall, of Chicago. All communications requiring the attention of this organization should hereafter be sent to his address, *cor. Michigan ave. and Jackson Street, Chicago, Ills.*

JAMES TRUMAN, Pres't N. A. of D. F.

OFFICERS OF THE ODONTOLOGICAL SOCIETY OF CHICAGO, 1889-90.

President, Dr. P. J. Kester, Vice-President, Dr. Frank H. Gardiner, Secretary and Treasurer, Dr. E. Noyes, Curator, Dr. Garrett Newkirk.

A TOO PREVIOUS "COP."

From Chicago *Times*, Nov. 20, 1889: "Some time ago a policeman at Kansas City, Mo., ordered a merchant who was standing in his own doorway "to move on." And when he failed to move the policeman knocked out three of his teeth. A jury has just assessed the value of those teeth at $526, which the hasty official will be compelled to pay.

ODONTOGRAPHIC SOCIETY.

At a meeting of the Odontographic Society, Monday evening, December 9, a paper was read by Dr. Noyes on "The Dental Profession;" after which officers were elected for 1890, as follows: Dr. J. Austin Dunn, president; Dr. T. A. Broadbent, vice-president; Dr. George N. West, recording secretary; Dr. George W. Haskins, corresponding secretary; Dr. C. J. Merriman, treasurer.

OHIO STATE DENTAL SOCIETY.

The officers for the ensuing year of the Ohio State Dental Society, are as follows: President—W. H. Sedgwick, Granville; 1st Vice-President—Martha J. Robinson, Cleveland; 2nd Vice-President—E. G. Betty, Cincinnati; Secretary—J. R. Callahan, Cincinnati; Treasurer—C. I. Keely, Hamilton. Next meeting will be held in city of Columbus, the last Tuesday in October, 1890. Respectfully J. R, Callahan, Secretary.

FIRST INTERNATIONAL DENTAL CONGRESS.

In concluding an admirable report of the meeting of the late First International Congress, the *Correspondenzblatt für Zahnarzte* says: "The international character of the gathering was illustrated by the endless number of toasts at the closing banquet; the responses drank were fit recognitions of the genuine French hospitality. In giving expressions to this feeling on our part while closing this brief report of the Congress, we do so in the hope and desire that we may see a Second International Dental Congress in the future."

UNIVERSITY OF CALIFORNIA—COLLEGE OF DENTISTRY.

The commencement exercises of the College of Dentistry of the University of California were held at Odd Fellows hall, San Francisco, California, on Wednesday evening, November 13, 1889. The address on behalf of the faculty was delivered by J. L. Asay, M. D. The degree of doctor of dental surgery was conferred by Horace Davis, A. B., president of the University, on the following named (9) gentlemen: Milton Ross Gambitz, Benjamin Mitchell Gunzburger, William Alexander Meyer, Warren Guice Mobley, Dorr Nash, Andrew John Powell, Edward William Pratt, Frederick Courtland Sutliff, Arthur Henry Wallace.

OBITUARY.

Died at New York, N. Y., November 15th, 1889, of remittent fever, Donald Douglas Magill, D. D. S., of Erie, Pa., in his twenty-sixth year.

Dr. Magill was born in Erie, Pa., Feby. 26th, 1863. He studied dentistry with his father, and graduated from the dental department of the University of Michigan, 1884. Since that time he has practiced his profession in Erie, where his many good qualities had won the friendship and respect of all who knew him.

Dr. Magill was a bright student and took active part in all professional work. In him the profession loses one whose future promised much, and his associates a genial and talented friend. The blow is a hard one to his parents, as he had become the staff of their old age, and we sincerely offer them our heartfelt sympathy in their bereavement.

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